

Northern Aroostook Region Management Plan



Deboullie Pond (background) and Gardner Pond (foreground)

**Maine Department of Conservation
Bureau of Parks and Lands**



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Northern Aroostook Plan Map
 December, 2006



I. Introduction

About This Document

This document constitutes a fifteen-year Management Plan (the Plan) for 56,867 acres of public land in the Northern Aroostook region of Maine managed by the Maine Bureau of Parks and Lands (the Bureau). The Plan summarizes the planning process and character of the Plan area, but its primary function is to 1) provide a description of the resources found on the properties addressed, 2) describe management issues identified by members of the public and Bureau staff, and 3) put forth management recommendations to be implemented over the next fifteen-year period.

One objective of the Plan is to provide a balanced spectrum of opportunities in keeping with those available in the region as a whole. In developing the management recommendations for each parcel, the Bureau has considered this broader perspective.

The Plan is also a commitment to the public that these properties will be managed within prescribed legislative mandates and in accordance with the Bureau's *Integrated Resource Policy* and its stated mission and goals. Future revisions to these commitments will occur only after providing opportunities for public comment. The Plan provides guidance to Bureau staff with responsibility for managing these properties, including a degree of flexibility in achieving the stated objectives. This document is not, however, a plan of operations.

An important aspect of the management of public lands is monitoring and evaluation of proposed management activities in terms of stated objectives. This Plan describes monitoring and evaluation procedures for recreational use, wildlife management, management of Ecological Reserves, and timber management.

The Northern Aroostook Region Management Plan will be in effect for the next 15 years. At five-year intervals, the Bureau will report to the Advisory Committee on accomplishments and changing conditions that may warrant amendments to the Plan. At the end of 15 years, a full revision will be undertaken. It is recognized that not all recommendations can be accomplished within the Plan period.

What is the Northern Aroostook Region?

The Northern Aroostook Region Plan area is comprised of the northeast portion of Maine, in an area defined by both its geography and its culture. The properties addressed in this Plan are owned or managed by the State of Maine through the Department of Conservation, Bureau of Parks and Lands. The region in general is bounded on the north by the St. John River; on the west by the St. John River and the U.S.-Canadian boundary; on the south by Salmon Brook Lake Bog and Deboullie Management Units; and on the west by the St. Francis Road and the western property line of the Deboullie Unit. The properties addressed in the Plan include:

- Deboullie Management Unit (21,871 acres)
- Eagle Lake Management Unit (24,084 acres)
- Salmon Brook Lake Bog Unit (1,857 acres, 140 easement acres)
- Public lots in Caswell (1,248 acres), Cyr Plantation (1,000 acres), Hamlin (982 acres), New Canada (1,000 acres), New Sweden (2 lots, 192 acres), St. John Plantation (2 lots, 1,167 acres), T16 R9 (97 acres of common undivided interest), T17 R4 (300 acres), Westmanland (965 acres), and Winterville Plantation (982 acres).

Other public or private conservation properties within or near the Plan area are mentioned in the Planning Context section, but are not the principal focus of this management plan. These properties include other lands managed by the Bureau including the Fort Kent State Historic Site and Fish River Island; the Allagash Wilderness Waterway; certain boat launching facilities managed by the Boating Facilities Division; and the rail trail corridors managed by the Off-road Vehicle Division. Also mentioned are properties managed by the Maine Department of Fisheries and Wildlife, the U.S. Wildlife Service, and the Nature Conservancy.

II. The Planning Process

Statutory and Policy Guidance

Multiple use management plans are required for Public Reserved Lands pursuant to Title 12 MRSA § 1847 (2), and must be prepared in accordance with the guidelines stated in the *Integrated Resource Policy* adopted in December 2000 by the Bureau. These laws and policies direct the Bureau to identify and protect important natural, ecological, and historic attributes; enhance important fisheries and wildlife habitat; provide opportunities for a variety of quality outdoor recreation experiences; and provide a sustained yield of forest products by utilizing forest management techniques and silvicultural practices that enhance the forest environment.

Public Participation and the Planning Process

Overall, the development of this Management Plan included a series of steps, each involving interdisciplinary review and extensive efforts to solicit and consider public comment, in order to achieve a Plan that integrated the various perspectives and needs while protecting and conserving the resources of Bureau lands. In total there were three public meetings held including a Public Scoping Session, an Advisory Committee meeting, and a general Public Meeting on the Final Plan.

Resource Assessments: The first phase of the planning process included an examination of resources and opportunities available on the Northern Aroostook properties. Beginning in the winter of 2006, Bureau staff undertook an intensive review of the natural and geological, historic and cultural, fisheries and wildlife, recreation, and timber resources on these properties. Much of this information was obtained by Department professionals conducting formal inventories of specific resources. Staff also participated in several reconnaissance field trips to parcels within the Region, including a winter snowmobile tour in March of 2006, and a spring tour the following June.

Issue Identification/Discussion through Public Meetings: Meetings to identify issues of concern to the public about these properties included:

- a Public Scoping Session held in Fort Kent on December 14th, 2006 to hear from various members of the public regarding the management concerns they had for the Region properties;
- Focus group (working group) meetings to further explore concerns and solutions with regard to traditional access to Black Pond in the Deboullie Unit and trail access to interior portions of Salmon Brook Lake Bog.

Advisory Committee Formation and Review of First Draft: In January and February of 2007 the Bureau compiled the information and issues gathered at this point, and developed a First Draft of the Plan, including management recommendations from Bureau staff. At the same time a Public Advisory Committee was formed to review and discuss this First Draft. Members of this Committee were selected on the basis of their resource expertise and regional and local

knowledge. An initial meeting to review this draft was held March 9th, 2007, with a public comment period following until March 26th, 2007.

Public Meeting on Final Draft Plan: Comments on the First Draft from the Advisory Committee, general public, and resource professionals were considered in developing a Final Draft of the Plan, which was presented at a general public meeting on May 11, 2007. A comment period from date of issue of the Final Draft until May 29th, 2007 provided the general public an opportunity to submit additional written comments.

Commissioner's Review and Adoption: Comments on the Final Draft Plan were considered in preparing a Plan for review by the Department of Conservation's Commissioner. After final revisions were made, the Plan was formally adopted on June 8th, 2007.

Summary of the Resource Allocation System

The Resource Allocation System is a land management-planning tool developed in the 1980's, and formalized in the *Integrated Resource Policy* (IRP), adopted in December 2000. The Resource Allocation System, which assigns appropriate management based on resource characteristics and values, is based on a *hierarchy* of natural and cultural resource attributes found on the land base. The hierarchy ranks resources along a scale from those that are scarce and/or most sensitive to management activities, to those that are less so. The resource attributes are aggregated into seven categories or "allocations," including (from most sensitive to least sensitive) special protection, backcountry recreation, wildlife management, remote recreation, visual consideration, developed recreation, and timber management.

This hierarchy defines the type of management that will be applied where these resource attributes are found, with *dominant* and *secondary* use or management designations as appropriate to achieve an integrated, multi-use management.

The following is a description of the Resource Allocation System categories applied in this Plan, the management direction defined for each category and the application of these within each parcel.

Designation Criteria for Special Protection Areas

- 1. Natural Areas**, or areas left in an undisturbed state as determined by deed, statute, or management plan; and areas containing rare and endangered species of wildlife and/or plants and their habitat, geological formations, or other notable natural features;
- 2. Ecological Reserves**, established by Title 12, Section 1801: "*an area owned or leased by the State and under the jurisdiction of the Bureau, designated by the Director, for the purpose of maintaining one or more natural community types or native ecosystem types in a natural condition and range of variation and contributing to the protection of Maine's biological diversity, and managed: A) as a benchmark against which biological and environmental change can be measured, B) to protect sufficient habitat for those species whose habitat needs are unlikely to be met on lands managed for other purposes; or C) as a site for ongoing scientific*

research, long-term environmental monitoring, and education." Most ecological reserves will encompass more than 1,000 contiguous acres.

3. Historic/Cultural Areas (above or below ground) containing valuable or important prehistoric, historic, and cultural features.

Management Direction

In general, uses allowed in Special Protection areas are carefully managed and limited to protect the significant resources and values that qualify for this allocation. Because of their sensitivity, these areas can seldom accommodate active manipulation or intensive use of the resource. Recreation as a secondary use is allowed with emphasis on non-motorized, dispersed activities. Other direction provided in the IRP includes:

Vegetative Management on Ecological Reserves, including salvage harvesting is also considered incompatible. Commercial timber harvesting is not allowed on either Ecological Reserves or Special Protection natural areas.

Wildlife management within these areas must not manipulate vegetation or waters to create or enhance wildlife habitat.

Management or public use roads are allowed under special circumstances, if the impact on the protected resources is minimal.

Trails for non-motorized activities must be well designed and constructed, be situated in safe locations, and have minimal adverse impact on the values for which the area is being protected. Trail facilities and primitive campsites must be rustic in design and accessible only by foot from trailheads located adjacent to public use roads, or by water.

Carry-in boat access sites are allowed on water bodies where boating activity does not negatively impact the purposes for which the Special Protection Area was established.

Hunting, fishing, and trapping are allowed where they do not conflict with the management of historic or cultural areas or the safety of other users.

Research, interpretive trails, habitat management for endangered or threatened species, are allowed in Special Protection natural areas unless limited by other management guidelines

Designation Criteria for Backcountry Recreation Areas

Relatively large areas (usually 1,000 acres or more) are allocated for Backcountry recreational use where a special combination of features are present, including:

Superior scenic quality

Remoteness

Wild and pristine character

Capacity to impart a sense of solitude

Backcountry Areas are comprised of two types:

Non-mechanized Backcountry Areas – roadless areas with outstanding opportunities for solitude and a primitive and unconfined type of dispersed recreation where trails for non-mechanized travel are provided and no timber harvesting occurs.

Motorized Backcountry Areas – multi-use areas with significant opportunities for dispersed recreation where trails for motorized activities and timber harvesting are allowed.

Management Direction

Trail facilities and campsites in all Backcountry Areas will be rustic in design and accessible from trailheads located outside the area, adjacent to management roads, or by water. All trails must be well designed and constructed, situated in safe locations, and have minimal adverse impact on the Backcountry values.

Management roads and service roads will be allowed as a secondary use in those Backcountry Areas where timber harvesting is allowed.

Timber management in Motorized Backcountry Areas will be an allowed secondary use, and will be designed to enhance vegetative and wildlife diversity. Salvage harvesting is allowed in Motorized Backcountry Areas only.

Wildlife management in Non-mechanized Backcountry Areas will be non-extractive in nature.

Designation Criteria for Wildlife Dominant Areas

1. Essential habitats are those regulated by law and currently consist of bald eagle, piping plover, and least tern nest sites (usually be categorized as Special Protection as well as Wildlife Dominant Areas).

2. Significant habitats, defined by Maine’s Natural Resource Protection Act, include habitat for endangered and threatened species; deer wintering areas; seabird nesting islands; vernal pools; waterfowl and wading bird habitats; shorebird nesting, feeding, and staging areas; and Atlantic salmon habitat.

3. Specialized habitat areas and features include rare natural communities; riparian areas; aquatic areas; wetlands; wildlife trees such as mast producing hardwood stands (oak and beech), snags and dead trees, den trees (live trees with cavities), large woody debris on the ground, apple trees, and raptor nest trees; seeps; old fields/grasslands; alpine areas; folist sites (a thick organic layer on sloping ground); and forest openings.

Management Direction

Recreation and timber management are secondary uses in most Wildlife Dominant Areas. Recreational use of Wildlife Dominant Areas typically includes hiking, camping, fishing,

hunting, trapping, and sightseeing. Motorized trails for snowmobiling and ATV riding are allowed to cross these areas if they do not conflict with the primary wildlife use of the area and there is no other safe, cost-effective alternative (such as routing a trail around the wildlife area). Direction provided in the IRP includes:

Habitat management for wildlife, including commercial and noncommercial harvesting of trees, will be designed to maximize plant and animal diversity and to provide habitat conditions to enhance population levels where desirable.

Endangered or threatened plants and animals – The Bureau will cooperate with the US Fish and Wildlife Service, National Marine Fisheries Service, Maine Department of Inland Fisheries and Wildlife, and Maine Natural Areas Program in the delineation of critical habitat and development of protection or recovery plans by these agencies on Bureau lands.

Timber management as a secondary use in riparian buffers will employ the selection system, retaining all den trees and snags consistent with operational safety. In other wildlife-dominant areas it will be managed to enhance wildlife values.

Designation Criteria for Remote Recreation Areas

1. Allocated to protect natural/scenic values as well as recreation values. Often have significant opportunities for low-intensity, dispersed, non-motorized recreation.
2. Usually are relatively long corridors rather than broad, expansive areas.
3. May be a secondary allocation for Wildlife Dominant areas and Special Protection – Ecological Reserve areas.
4. Examples include trail corridors, shorelines, and remote ponds.

Management Direction

Remote Recreation areas are allocated to protect natural/scenic values as well as recreation values. The primary objective of this category is to provide non-motorized recreational opportunities; therefore, motorized recreation trails are allowed only under specific limited conditions, described below. Timber management is allowed as a secondary use. Direction provided in the IRP includes:

Trail facilities and remote campsites will be rustic in design and accessible by foot from trailheads, management and/or public roads, or by water.

Existing snowmobile and all-terrain vehicle activity may be continued on well-designed and constructed trails in locations that are safe, where the activity has minimal adverse impact on protected natural resource or remote recreation values, and where the trails cannot be reasonably relocated outside of the area.

New snowmobile or all-terrain vehicle trails are allowed only if all three of the following criteria are met:

- (1) no safe, cost effective alternative exists;

- (2) the impact on protected natural resource values or remote recreation values is minimal; and
 - (3) the designated trail will provide a crucial link in a significant trail system;
- Access to Remote Recreation areas is primarily walk-in, or boat, but may include vehicle access over timber management roads while these roads are being maintained for timber management.

Designation Criteria for Visual Areas

Many Bureau-managed properties have natural settings in which visual attributes enhance the enjoyment of recreational users. Timber harvests which create large openings, stumps and slash, gravel pits, and new road construction, when viewed from roads or trails, may detract significantly from the visual enjoyment of the area. To protect the land's aesthetic character, the Bureau uses a two-tier classification system to guide management planning, based on the sensitivity of the visual resource to be protected.

Designation Criteria

Visual Class I. Areas where the foreground views of natural features that may directly affect enjoyment of the viewer. Applied throughout the system to all shorelines, trails, public use roads, and management roads open to public vehicular traffic.

Visual Class II. Include views of forest canopies from ridge lines, the forest interior as it fades from the foreground of the observer, background hillsides viewed from water or public use roads, or interior views beyond the Visual Class I area likely to be seen from a trail or road.

Visual Class I Management Direction:

- Timber harvesting is permitted under stringent limitations directed at retaining the appearance of an essentially undisturbed forest.
- Openings will be contoured to the lay of the land and limited to a size that will maintain a natural forested appearance.
- Within trail corridors or along public use roads it may be necessary to cut trees at ground level or cover stumps.
- Branches, tops, and other slash will be pulled well back from any trails.
- Scenic vistas may be provided.

Visual Class II Management Direction:

- Managed to avoid any obvious alterations to the landscape.
- Openings will be of a size and orientation as to not draw undue attention.

Designation Criteria for Developed Recreation Areas

Developed Class I areas are low to medium density developed recreation areas, while *Developed Class II* areas have medium to high density facilities and use such as campgrounds with modern sanitary facilities.

Class I Developed Recreation Areas

1. Typically include more intensely developed recreation facilities than found in Remote Recreation Areas such as:
 - drive-to primitive campsites with minimal supporting facilities;
 - gravel boat launch areas and parking areas;
 - shared use roads and/or trails designated for motorized activities; and
 - trailhead parking areas.
2. Do not usually have full-time management staff.

Management Direction

Developed Recreation areas allow a broad range of recreational activities, with timber management and wildlife management allowed as secondary uses. Direction provided in the IRP includes:

Timber management, allowed as compatible **secondary use**, is conducted in a way that is sensitive to visual, wildlife and user safety considerations. Single-age forest management is not allowed in these areas. Salvage and emergency harvests may occur where these do not significantly impact natural, historic, or cultural resources and features, or conflict with traditional recreational uses of the area.

Wildlife management may be a compatible **secondary use**. To the extent that such management occurs, it will be sensitive to visual, and user safety considerations.

Visual consideration areas (see below) are often designated in a buffer area surrounding the Developed Recreation area.

Designation Criteria for Timber Management Areas

1. Area meets Bureau guidelines as suitable for timber management, and is not prohibited by deed or statute.
2. Area is not dominated by another resource category. Where other uses are dominant, timber management may be a secondary use if conducted in a way that does not conflict with the dominant use.

Management Direction

The Bureau's timber management practices are governed by a combination of statute and Bureau policy, including but not limited to policies spelled out in the IRP. These general policies include:

Overall Objectives: The Bureau's overall timber management objectives are to demonstrate exemplary management on a large ownership, sustaining a forest rich in late successional character and producing high value products (chiefly sawlogs and veneer) that contribute to the local economy and support management of Public Reserved lands, while maintaining or enhancing non-timber values (secondary uses), including wildlife habitat and recreation.

Forest Certification: Timber management practices (whether as a dominant or secondary use) meet the sustainable forestry certification requirements of the Sustainable Forestry Initiative, and the Forest Stewardship Council.

Roads: Public use, management, and service roads are allowed. However, the Bureau, in practice, seeks to minimize the number of roads to that needed for reasonable public vehicular access or timber harvesting.

Recreational Use: Most recreational uses are allowed but may be subject to temporary disruptions during management or harvesting operations. The Bureau has latitude within this allocation category to manage its timber lands with considerable deference to recreational opportunities. It may, through its decisions related to roads, provide varying recreational experiences. Opportunities for hiking, snowshoeing, back-country skiing, horseback riding, bicycling, vehicle touring and sightseeing, snowmobiling, and ATV riding all are possible within a timber management area, but may or may not be supported or feasible, depending on decisions related to creation of new trails, or management of existing roads and their accessibility to the public.

In addition, the IRP provides the following specific direction for timber management:

Site Suitability: The Bureau will manage to achieve a composition of timber types that best utilize each site.

Diversity: For both silvicultural and ecological purposes, the Bureau will maintain or enhance conditions of diversity on both a stand and wide-area (landscape) basis. The Bureau will manage for the full range of successional stages as well as forest types and tree species. The objective will be to provide good growing conditions, retain or enhance structural complexity, maintain connectivity of wildlife habitats, and create a vigorous forest more resistant to damage from insects and disease.

Silvicultural Systems: A stand will be considered single-aged when its tree ages are all relatively close together or it has a single canopy layer. Stands containing two or more age classes and multiple canopy layers will be considered multi-aged. The Bureau will manage both single- and multi-aged stands consistent with the objectives stated above for Diversity; and on most acres will maintain a component of tall trees at all times. Silvicultural strategy will favor the least disturbing method appropriate, and will usually work through multi-aged management.

Location and Maintenance of Log Landings. Log landings will be set back from all roads designated as public use roads. Off-road yarding may be preferable along all gravel roads, but the visual intrusion of roadside yarding must be balanced with the increased soil disturbance and loss of timber producing acres resulting from off-road spurs and access spurs. All yard locations and sizes will be approved by Bureau staff prior to construction, with the intention of keeping the area dedicated to log landings as small as feasible. At the conclusion of operations, all log landings where there has been major soil disturbance will be seeded to herbaceous growth to stabilize soil, provide wildlife benefits, and retain sites for future management need.

FOREST CERTIFICATION

The Bureau was awarded certification of its forestlands under the Sustainable Forestry Initiative (SFI) and the Forest Stewardship Council (FSC) programs in 2002. These third-party audits were conducted to determine if these lands were being managed on a sustainable basis. The process for conducting the audit was rigorous and unique in that the Bureau underwent the two audit programs simultaneously. The audit was comprised of a field analysis of forest management practices at selected sites around the state, and an analysis of the Bureau's financial, personnel, policy development, and record-keeping systems. Successful completion of the FSC/SFI systems also qualified the Bureau to enter into the "chain of custody" program to market its "green-certified" wood. The process for enrollment in this program was completed in 2003, with certified wood now being marketed from Bureau managed lands. A Bureau-wide certification team was implemented to address "conditions" and "minor nonconformances" stipulated in the audit reports, including: significant enhancements to forest inventory data, development of a computerized forest-modeling program, a timeline for updating management plans for the entire land base; improvements in the use of Best Management Practices to protect water quality; and new commitments to public outreach and education programs. The Bureau is required to meet these conditions within certain timeframes in order to keep its certification status in good standing over the five-year certification period.

In 2006, the Bureau hosted its first full recertification by FSC, concurrently undergoing its first surveillance audit by SFI, this latter now required under SFI's updated standards. Although the field portion took place during and immediately after a heavy November rainstorm, Best Management Practices implemented on Bureau lands were working well, and certifiers for both systems were very pleased with Bureau silviculture at all sites visited. As is usually the case, there were several conditions (now called Corrective Action Requests, or CARs) made by each certification system, which the Bureau will need to satisfy as it continues to improve its forest management which has already been certified as being exemplary.

Many of the lands in the Northern Aroostook Region hosted various components of the certification field audits scheduled in 2001 and 2006.

III. The Planning Context

Culture and History of the Northern Aroostook Region

Culture. Aroostook County is Maine's largest county, and at 4.3 million acres is the largest county east of the Mississippi River - larger than the states of Connecticut and Rhode Island combined. Located at the northeastern corner of the state, Aroostook County borders the Canadian Provinces of Quebec and New Brunswick, with more than 2,000 lakes, streams, rivers, and ponds covering nearly 80,000 acres of water. Its vast natural resource base and strong agrarian heritage have fostered a regional economy reliant upon these resources.

The St. John Valley area (one of three "subregions" in Aroostook County identified by the Northern Maine Development Commission) consists of three main towns, Madawaska (pop. 4,534), Fort Kent (pop. 4,233), and Van Buren (pop. 3,005), which supply the bulk of resources and income for the area population. Fort Kent is home to the Maine Winter Sports Center, which has provided boosts to the area economy with events such as the 2004 World Cup Biathlon and the 2004 US Junior National Biathlon. In addition, The Northern Maine Medical Center and The University of Maine at Fort Kent combine to provide jobs, health care, and higher education that contributes to the quality and standard of living unique to the northern Aroostook communities.



More than 88% of Aroostook County is forested, dominated by spruce/fir and northern hardwoods, which support the county's important wood, paper, and lumber industries. The vast forestlands to the west are mostly within the North Maine Woods system. The largest Aroostook County employer, Fraser Papers, Inc., is located in Madawaska, with a companion facility in Edmundston, New Brunswick, and employs approximately 1,000 area people. Fraser recently celebrated its 75th anniversary of operation.

Less than 8 percent of the county's land area is used for agriculture. Approximately 60,000 acres are in potato production, providing 90 percent of all the potatoes grown in Maine. Hay, barley, oats, peas, and broccoli are also important crops. Growers are in various stages of developing flax, soybeans, and corn (for fuel) in an effort to diversify. (*provided by the Northern Maine Development Commission*)

History. Far northern Maine remained covered by a glacial ice sheet longer than the southern three-fourths of the state and was likely colonized later by people as a result. Archaeological sites dating to the Paleoindian period (ca. 11,000 years ago) have not been found north of

Munsungan Lake. The Paleoindians were probably large game hunters who traveled on foot through a boreal forest landscape characterized by patches of tundra, forest and remaining ice masses. The Paleoindians are thought to have traveled great distances as they followed migratory herds of caribou (or other extinct Pleistocene species) and exploited quarries of high quality material for stone tools.

The emergence of continuous forest cover about 10,000 years ago corresponds with a shift in the manner in which people used the land. The large rivers and chains of large lakes attracted repeated and concentrated human use as both travel corridors and for subsistence activities. Although there is scant direct archaeological evidence of boats, the patterning of early Holocene archaeological sites strongly suggests the use of dugout canoes or skin covered boats.

About three thousand years ago a shift to smaller stone woodworking tools suggests the transition to birchbark canoe technology. These lightweight vessels allowed people greater mobility and could be carried from one drainage system to another. Ceramic pottery and stone arrowheads (bow and arrow technology) appear at about the same time.

Oral histories and ethnographic accounts indicate that the Maliseets (Malecite, Wolastoqiyik) occupied seasonal villages along the upper St. John River at Grand Falls, Tobique, and Meductic for salmon fishing. Kin groups or clans would move up the various river systems in late summer and fall and disperse into small family groups for winter camps over a vast area. They subsisted largely on beaver during the winter, with additions of caribou, moose, and bear. The Bear (*Muin, Muwin*) clan of the Tobique Maliseets would move up the Aroostook River and winter in the Aroostook, upper Allagash and upper St. John Rivers. These bands used the entire landscape for their sustenance, with activities that ranged from plant gathering and eel weirs, to small game, bear, moose and caribou hunting.

Since about 10,000 years ago, archaeological evidence indicates that people lived their lives entirely in the interior. Stone tools and flakes are largely from local sources and the pottery is tempered with quartz sand. There is no significant evidence that any part of the year was spent on the coast, and marine shell, stone tool materials from coastal regions, and shell tempered pottery are notably absent from the archaeological sites.

During the early historic period, probably as a result of the fur trade, Mi'kmaq (Micmac, Mi'gmaq) groups appeared in the Maliseet villages. Both tribe were staunch allies of the French during the series of wars between France and England, but also fought with each other over access to the fur trade. Madawaska maintained a mixture of Maliseet and Mi'kmaq families well into the twentieth century. Bear clan Maliseets were still using eel weirs at the mouth of the Machias River in Ashland in the 1920s. An inscription on a limestone ledge on the shore of Big Machias Lake reads "CHARLIE BEAR was here with two others, May 20, 1889. (provided by Dave Putnam, University of Maine-Presque Isle)



Fort Kent Blockhouse. This 2.89-acre State Historic Site is located in downtown Fort Kent at the mouth of the Fish River.

The original site, deeded to the State in 1891, consisted of the historic blockhouse on an 80'x 94' lot. An additional 2.72-acre parcel was acquired in 1965. Deeded access to the site was also obtained at that time. The site is a National Historic Landmark and listed in the National Register of Historic Places. The property has also been under lease by Boy Scout Troop #189, who utilizes the property as a base of operations.

The Blockhouse is a fortification built during the "Bloodless" Aroostook War of 1838 and 1839 – a border dispute between Great Britain and the United States. The signing of the Webster-Ashburton Treaty in 1842 settled the boundary dispute between Maine and New Brunswick and reduced the need for the blockhouse, although federal troops remained there until 1845 to protect Maine and U.S. interests in the region.

The Blockhouse is a two-story structure. Its walls are built of square-hewn cedar logs, some of which measure over 19 inches in width. Although a few minor changes have been made to the structure, including some related to its present use as a museum, it remains a good example of early-19th-century military architecture. Dormers removed years ago are being restored, as these are now thought to be part of the original architecture.

There is a picnic area along the river, which has also been used for camping by boaters for many years, though not a formally designated campsite.

The Blockhouse is an important component to area tourism. Public use figures for the summer months have ranged from 3,401 to 5,314 visitors with 7,500 to 8,500 visitors estimated on a year-round basis.

The Aroostook State Park Manager in Presque Isle provides oversight for a seasonal ranger assigned to the Blockhouse and activities relating to the operation of the historic site.

Fish River Scenic Byway – Heart of the Northern Aroostook Region

The Fish River Scenic Byway consists of a 38-mile section State Route 11 from a point north of the Nashville – Portage Lake town line and ending at the south compact line in Fort Kent near the intersection of Route 161 adjacent to the old Fish River Bridge. A corridor plan for this byway has been recently developed by the Northern Maine Development Commission.

Visitors traveling the Byway face few crowds, congestion, and development in this rural corner of the state. The Byway corridor includes breathtaking views of Portage Lake, Eagle Lake, and Soldier Pond, as well as the mountainous and hilly terrain to the east and west. The corridor provides four-season access to many sporting camps, seasonal cottages, and other recreational opportunities including the Eagle Lake and Deboullie Units, and the Fort Kent State Historic Site.

The scenic byway is also a working byway. Route 11 is one of the oldest roads in northern Maine, constructed in concert with



railroad expansion into north woods to access timber products for lumber and paper mills to the south. This corridor continues today as a critical transportation resource for the forest products industry throughout the region. Raw fiber is supplied to Fraser Paper in Madawaska and lumber mills in Portage, Nashville, Ashland, and Masardis from Route 11. Chips, pulp, and finished goods are transported to points further south including Millinocket, and Lincoln.

Natural and Geological Resources within the Region

The Northern Aroostook region is dominated by a dense forest landscape of spruce-fir and northern hardwoods, with agricultural areas and the rolling hillsides of the St. John Valley contributing to the regions' distinctive character. Calcareous bedrock (calcium/limestone), uncommon in Maine, is relatively common in the eastern portion of the region. Surface deposits consist primarily of till from the last glaciation (11,000 years ago). This dense, unsorted deposit forms an almost impenetrable barrier on top of the bedrock. The steep cliffs of Deboullie Mountain provide a dramatic backdrop for several rare plants, uncommon animals, and numerous exemplary natural communities. Both the Deboullie and Eagle Lake Units are within the St. John River watershed.

Common natural communities include Spruce – Fir Broom-moss Forests, Spruce – Fir – Wood Sorrel – Feathermoss Forests, and Beech – Birch – Maple Forests. Common forested wetland communities include Northern White Cedar Swamps and Cedar – Spruce Seepage Forests. The Eagle Lake and Salmon Brook Lake Bog Units contain large wetland complexes.

Natural disturbances in the Northern Aroostook Region are similar to disturbances evident in other areas of the state. Spruce budworm outbreaks have occurred two to three times per century, with the latest occurring in the 1970's and 1980s. While the scale of budworm damage covers millions of acres, the intensity varied considerably as indicated by the balsam fir component of each stand (balsam fir being the preferred food of the budworm). Budworm damage was found to be most severe in transitional areas next to large openings of burned stands and along wetland zones. At higher elevations, budworm damage and the higher concentration of fir combined with wind and weather events to create larger, more numerous gaps.

Ecological Reserves. In the mid-1980s, a group of scientists, conservationists, and natural resource managers recommended the establishment of an Ecological Reserves system for Maine. In 1989, the recommendations of this group led the Maine State Legislature to pass a resolve (L.D. 1241) providing funds for a study on an Ecological Reserves system. The State Planning Office published the results of that study in a report titled, *An Ecological Reserves System for Maine: Benchmarks in a Changing Landscape* (McMahon 1993). The report contains important background material on the Ecological Reserves concept.

The Maine Forest Biodiversity Project (MFBP) was formed in 1994 to explore and develop strategies to help maintain Maine's existing native species and the ecosystems that contain them. The MFBP was a consensus-based collaborative effort involving approximately one hundred individuals representing a diverse spectrum of interests and opinions: landowners; sportsmen; educators; advocates for property rights; foresters; wildlife and land conservation professionals; and representatives of the scientific community, state and federal agencies, and the business community. The inventory of potential Ecological Reserves conducted by the MFBP took place

between January 1995 and October 1997, with guidance from a twenty-member scientific advisory panel.

Based on the work by the MFBP the Maine Legislature in 2000 authorized the designation of Ecological Reserves on Department of Conservation lands, and 68,974 acres were designated by the Bureau of Parks and Lands Director at that time. To fulfill the legislative intent, Ecological Reserves were established as 1) benchmarks against which biological and environmental change could be measured; 2) habitats adequate to maintain viable populations of species whose habitat needs are unlikely to be met on other lands; and 3) sites for scientific research, long-term environmental monitoring, and education. In addition, public access, hunting, and fishing are among the allowed uses on Ecological Reserves. The Ecological Reserves include many of Maine’s best examples of alpine meadows, lakes and streams, and old growth forests. Areas designated in the Northern Aroostook Plan area included:

Unit	Ecological Reserve Location	Reserve Acres
Deboullie	Uplands of Deboullie, Gardner, Black Ponds	7,253
Salmon Brook Lake Bog	Fen ecosystem around Salmon Brook Lake.	1,053
Total		8,306

Beginning in 2002, the Department of Conservation worked with a multi-disciplinary committee to draft an *Ecological Reserve Monitoring Plan* that guides periodic data collection at the landscape, stand, and species levels. The monitoring program is tied closely to other statewide and nationwide forest monitoring programs that use U.S. Forest Service Forest Inventory and Analysis (FIA) methods. To date, 387 permanent monitoring plots have been established on 12 Ecological Reserves, with ongoing monitoring work increasing the number of plots each year. The long-term monitoring program and the value of Ecological Reserves to this program have been recognized as models for public lands throughout the northeast.

Upper St. John River Forest – The Nature Conservancy. Although southwest of the Plan area, The Nature Conservancy manages Ecological Reserves (called “reserves”) within its 181,000-acre ownership along the Upper St. John River. This property consists of two separate blocks of land. The northern portion of which is located in Aroostook County (consisting all or most of townships T12 R16, T11 R17, and T11 R16). The forest reserves established on the Conservancy’s ownership consists of landscape (or large “matrix”), intermediate, and local-scale reserves with embedded large and small-patch landscape features. The size of the reserves was determined based on the historic disturbance patterns associated with the targeted landscape type. Location was primarily determined by identifying the most intact and mature forested areas. Where significant distance gaps existed between reserves, major riparian buffers were expanded to accommodate movement of species and facilitate connectedness. This design placed all of the large (4,000 acres and up) roadless areas in reserves. It also captured both major landscape types represented on the Conservancy’s Upper St. John River Forest with an emphasis

on the lowland spruce fir characterized by historic patchy budworm damage and fire regime. Following is a summary of the reserve area location and size:

- Landscape-scale block in T11 R16, T11 R17, and T12 R16 (~35,000 acres)
- Intermediate-scale in T9 R17 and T8 R16 (4,000 – 10,000 acres +/-)
- Local-scale (500-1,000 acre) in T9 R18, T9 R17, T8 R18 and T8 R17
- 26 miles of Upper St. John River shoreline, ~10 miles fully contained (both banks)

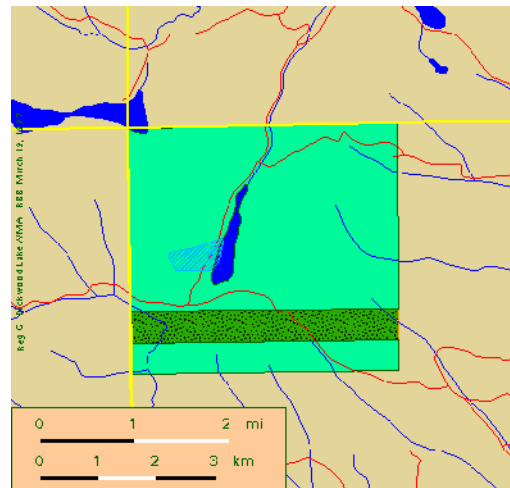
The Conservancy has primary responsibility for the oversight and management of the reserve forest. (*information on the Upper St. John River Forest provided by the Nature Conservancy*)

Fisheries and Wildlife Resources within the Region

Wildlife. The natural communities within the Region area provide habitat for a number of common wildlife species. In addition to black bear, moose, deer, and beaver, the Region provides habitat for American marten and Canada lynx, a Maine threatened species. Spruce grouse, gray jays, northern parula, yellow-bellied fly catcher, and the black-throated green warbler are also common. Several rare animal populations are located within the Deboullie Unit including the northern bog lemming and a historic population of peregrine falcons.

Beavers are a common influence in wetlands throughout the Region. Beavers build dams to give safe access to the hardwoods they prefer to eat. When active, beaver ponds flood adjoining uplands, enlarging wetlands and creating new areas for wetland species to colonize. Once the hardwoods within a safe distance of the pond are gone, beavers often abandon their dams and build new dams in different locations. These abandoned ponds fill slowly with sediment and eventually transition back to uplands. By creating and abandoning impoundments along the stream course, beavers create a mosaic of habitats for other plant and wildlife species.

Dickwood Lake Wildlife Management Area (WMA). In the northwest corner of the Town of Eagle Lake (pictured) is the 4,360-acre Dickwood Lake WMA managed by the Maine Department of Fisheries and Wildlife. Most of the property is within state ownership, with 500 acres owned by the town. The WMA includes all of Dickwood Lake, where boating and fishing are allowed, and the southeast corner of Wallagrass Lake. The property is primarily an upland forest where hunting and trapping are permitted uses.



Fisheries. Fish populations in the Region are dominated by coldwater species that include: brook trout, lake trout, landlocked salmon, burbot, rainbow smelt and whitefish. Several ponds in the Deboullie Management Unit contain populations of landlocked Arctic charr (a species of Special Concern), that although present in these waters, are not widespread throughout the state.

Common non-game fish species include: white sucker, longnose sucker, fallfish, yellow perch and numerous minnow species.

Muskellunge are now present and thriving in the St. John River, having been introduced into a headwater lake of the Northwest Branch by the province of Quebec in 1970. Smallmouth bass have also become established in the St. John River via an unauthorized introduction.

Aroostook National Wildlife Refuge. The federally-owned Aroostook NWR is located on part of the former Loring Air Force Base, in Limestone, Maine. It was established in 1998, when 4,700 acres were transferred from the U.S. Air Force to the U.S. Fish and Wildlife Service. The refuge also administers some 2,400 acres of wetland conservation easements throughout Aroostook County. In an area of Maine where the landscape is dominated by agricultural crops such as potatoes and broccoli, Aroostook NWR protects valuable wildlife habitat. The variety of habitat types attracts a diversity of wildlife species. The refuge includes valuable wetland and forested habitat for declining populations of the American woodcock, several important species of waterfowl including the American Black Duck, and many species of Neotropical Migratory Birds.

Recreation Resources within the Region

North Maine Woods. The Deboullie Unit lies within the northern portion of the 3.5-million acre North Maine Woods recreation management system, where development has been sparse



because of large timber company holdings. While these large landowners traditionally allowed public recreational use of their lands for hunting, fishing, trapping, and other backcountry uses, most roads for overland access developed in the 1960's following elimination of river log drives. This eventually led to the formation of North Maine Woods, Inc. The NMW operates a coordinated system of controlled access and charges day use and camping fees for recreational use of these working forest lands.

Participating landowners include a number of private timber and land management companies as well as the State of Maine and The Nature Conservancy. North Maine Woods manages two checkpoints that provide access to the Deboullie Unit: the St. Francis checkpoint, located north of the Unit on the St. Francis Road, and the Fish River checkpoint, located west of the Town of Portage.

Allagash Wilderness Waterway

Also within the NMW management area is the Allagash Wilderness Waterway, the northern section of which is near the west boundary of the Northern Aroostook Plan area. The Allagash Wilderness Waterway, managed by the Bureau of Parks and Lands, was established by the Maine Legislature in 1966 to preserve, protect, and enhance the natural beauty, wilderness character, and habitat of this unique area. It is a magnificent, 92-mile-long ribbon of lakes, ponds, rivers, and



streams winding through the heart of northern Maine's vast commercial forests. For more than a century The Allagash has been praised and enjoyed as a sportsman's paradise.

Northern Forest Canoe Trail. The region is also the northern terminus of the Northern Forest Canoe Trail, a 740-mile water trail that follows Native American travel routes from Old Forge, New York, across Vermont, Québec and New Hampshire, and ending on the St. John River in Fort Kent. In addition to being a paddling route, the Trail celebrates the history of the Northern Forest. Paddlers can explore the natural beauty of the rivers and lakes, as well as the communities through which the trail passes.

Winter Sports Opportunities. Due to Northern Maine's relatively long winter season and reliable snow conditions, a number of winter recreation activities are found throughout the region. Among them is The Maine Winter Sports Center's (MWSC) 10th Mountain Lodge located in the Town of Fort Kent, a world class Nordic ski facility. The 10th Mountain Lodge is named for the legendary 10th Mountain Division – a highly decorated elite ski force specially trained in winter warfare during World War II. The MWSC hosted the 2004 World Cup Biathlon, the first ever held in New England. Over 26 million people throughout the world watched the World Cup on television, with nearly 20,000 others in attendance - making it Maine's most watched sporting event ever. MWSC also hosted the 2005 U.S. Junior Biathlon Team Trials, and the 2005 Paralympics Nordic World Championships. The Center is a state-of-the-art 6,000 square foot lodge with fully equipped kitchen, sauna, locker room and dorm room facilities for athletes-in-residence. The MWSC has also committed to providing Nordic ski opportunities to the general public, including the development of 25 kilometers (15.5 miles) of trails and a lighted roller ski loop.



Fort Kent is the location of Lonesome Pine Trails, a downhill ski facility within walking distance of the downtown area. There are 13 groomed trails for Alpine and Nordic skiing, and snowboarding. The ski area provides exceptional views towards Canada and the St. John River Valley.

Fort Kent is also host for the Can-Am Crown International Sled Dog Race, one of the premier competitions of its kind in the eastern United States. The Can-Am Crown organization was founded on October 16, 1992 and was established to provide a mid-distance sled dog race to a growing community of “mushers” throughout the region, and to enhance the region's image as a travel destination. Held in early March, the Can-Am Crown 250 has rapidly gained popularity as the longest sled dog race in the eastern United States. The race primarily takes place in the area west of the Route 11 corridor to the St. John River, and south to the Town of Portage.

The Eagle Lake 100 Sled Dog Race is a relatively new but popular event attracting mushers from around the state. The race provides a medium-distance alternative to the more difficult Can-Am race and the 30-60 mile race courses found elsewhere in New England.

Fish River Island. Fish River Island, located at the confluence of the St. John and Fish Rivers, was acquired by the Bureau in 1970, and partially funded through the Land and Water Conservation Fund program (LWCF). The 6-acre island is close to the mainland, downtown Fort Kent, and the Fort Kent Blockhouse. The island includes approximately 2,600 feet of frontage on the river, and can be reached on foot during periods of low water. Vegetation on the island consists of an open meadow area surrounded by American elm, paper birch, and poplar.

The island was acquired to provide a picnic and camping alternative for boaters on the St. John and Fish Rivers, who were otherwise using the frontage at the nearby Fort Kent Blockhouse. It was envisaged to be connected to the mainland by a short causeway, with assistance from the Town, although this has not yet been accomplished. The Town has developed a walking trail out to and around the island, which comprises most of the recreational use. There continues to be interest in developing a means for trail users to get out to the island when water conditions are high. The Aroostook State Park manager in Presque Isle provides oversight for activities relating to the operation of the site.

Motorized Trail Opportunities. Aroostook County provides significant opportunities for motorized trail use, including snowmobiles and ATV's. Twenty-eight ATV clubs and 8 municipalities manage and maintain 1,255 miles of trails throughout Aroostook County (approximately 25% of the statewide total), many of which are located in the Northern Aroostook Plan area. In 2006 the Bureau of Parks and Lands' Off-road Vehicle Division (ORV) provided over \$100,000 in grants to these organizations in support of this system. There are 35 snowmobile clubs and 32 municipalities that manage and maintain the 2,085-mile trail system (about 16% of the statewide total) throughout Aroostook County, many of which are located within the Northern Aroostook Plan area. In 2006 The ORV Division provided approximately \$650,000 in grants to these organizations in support of this system.

Approximately 144 miles of abandoned railroad corridor in northern Aroostook County has been acquired by the Bureau with assistance from the Lands for Maine's Future program and converted to a multi-use trail. This system provides important connections and enhancements to other managed trail systems throughout the region. With assistance from the Bureau's Off-road Vehicle Program, many area trail clubs and municipalities have helped to develop and manage this system.

Heritage Trail. The Heritage Trail is a 15-mile multi-use recreational corridor located in the towns of Fort Kent, St. John Plt., and St. Francis.

Bangor and Aroostook Trail. The Bangor and Aroostook Trail (BAT) is a 59-mile trail corridor located in the towns of Washburn, Perham, Mapleton, Woodland, Caribou, Westmanland, New Sweden, Stockholm, T17 R3, and Van Buren. The trail crosses the western side of Salmon Brook Lake Bog (*pictured right*) and the New Sweden public lot.



Aroostook Valley Trail. The Aroostook Valley Trail (AVT) is a 28-mile recreational trail corridor located in the towns of Caribou, New Sweden, Washburn, and Presque Isle. This trail is located in proximity to the Bangor and Aroostook Trail, and is used in conjunction with it, often providing a narrower and more primitive alternative route. It also provides access to and views of the Aroostook River for several miles.

Public Boat Access. State-owned boating facilities in Northern Maine are a shared responsibility of the Bureau of Parks and Lands' Boating Facilities Division and the Department of Inland Fisheries and Wildlife. There are twenty state-owned or state-assisted public boat access sites in the region (*see Table 1 below*) of which fifteen are suitable for trailered launching and four are for hand carried boats only. Six sites are located on river segments and fourteen are on great ponds. Five sites are located in the Deboullie Management Unit alone (*Eagle Lake boat launch site is pictured*).



Table 1 - State-owned or assisted boating facilities in the area as of 2005.

	File	Water Body	Town	Owner	Type
1	298	Hunnewell Lake	St. John Plt.	DIF&W	Hand Carry
2	49	Black Lake	Fort Kent	DOC	Trailer
3	29	Long Lake	St. Agatha	DOC	Trailer
4	188	Cross Lake	T16 R5 WELS	Irving P&P Co.	Trailer
5	179	Madawaska Lake	T16 R4 WELS	Private Land	Trailer
6	176	Little Madawaska Rr.	Stockholm	Stockholm	Hand Carry
7	34	Eagle Lake	Eagle Lake	DOC	Trailer
8	50	Portage Lake	Portage Lake	Portage Lake	Trailer
9	201	Aroostook River	Caribou	WPS	Trailer
10	349	Aroostook River	Caribou	B&A RR	Hand Carry
11	92	Trafton Lake	Limestone	Limestone	Trailer
12	377	Aroostook River	Ft. Fairfield	DIF&W	Trailer
13	376	Aroostook River	Presque Isle	DIF&W	Trailer
14	402	Hansen Lake	Presque Isle	Presque Isle	Trailer
15	148	Presque Isle Stream	Presque Isle	Presque Isle	Trailer
16		Togue Pond	T15 R9 WELS	DOC	Trailer
17		Perch Pond	T15 R9 WELS	DOC	Trailer
18		Deboullie Pond	T15 R9 WELS	DOC	Trailer
19		Pushineer Pond	T15 R9 WELS	DOC	Trailer
20		Sixth Pelletier Bk. Lk.	T15 R9 WELS	DOC	Hand Carry

There are ten great ponds and six river segments in the Plan area in need of improved public boat access (listed in the Department's *Strategic Plan for Providing Public Access to Maine Waters for Boating and Fishing*; March 1995 and 2000 - see tables below). Boat access on Square Lake is on private lands, with no guarantees of continued availability. The Boating Facilities Division

is working with Winterville Plantation to develop public boat access on St. Froid Lake. There is also need for boat access to Mud Lake (T17 R5); however, an inspection of the Bureau-owned property indicates that the frontage is not suitable for development for boating access.

Table 2 - Lakes Listed as Priorities in the *Strategic Plan for Providing Public Access to Maine Waters for Boating and Fishing, 1995 and 2000.*

No.	Lake	Town 1	Town 2	Agency
1	Mud Lake	T17R5 WELS	T17R4 WELS	DOC/DIF&W
2	Square Lake	Square Lake Twp		DOC
3	St. Froid Lake	Winterville Plt.		DOC
4	Fish River Lake	T14 R8 WELS	T13 R8 WELS	DOC
5	Big Machias Lake	T12 R8 WELS		DOC
6	Wallagrass (1 st & 2 nd)	St. John Plt.		DIF&W
7	Machias Lake (Little)	Nashville Plt.		DIF&W
8	Sly Brook Lake (1st)	New Canada		DIF&W
9	Wheelock Lake	St. John Plt.		DIF&W
10	Soldier Pond	Wallagrass		DIF&W

Table 3 – River Segments Listed as Priorities *Strategic Plan for Providing Public Access to Maine Waters for Boating and Fishing, 1995 and 2000.*

No.	River	Town	Miles of River	Type
1	Fish River	Fort Kent	35	Hand Carry
2	Aroostook River	Fort Fairfield	5	Improved
3	Aroostook River	Presque Isle	12	Improved
4	St. John River	Frenchville	12	Improved
5	St. John River	Grand Isle	12	Improved
6	St. John River	Madawaska	12	Improved

IV. Properties and Resources within the Plan Area

Deboullie Unit

1. Character of the Landbase

The 21,871-acre Deboullie Management Unit is an area of extraordinary beauty; encompassing steep mountains, crystal clear ponds, rare and unusual plants, exceptional fisheries, and four-season recreation opportunities. The Unit, located 30 miles southeast of Fort Kent, includes all of Township 15 Range 9 (Deboullie Township). The property is within the boundaries of the North Maine Woods recreation management system.

Most of the Unit consists of gently rolling, forested ridgelines typical of northern Maine. The southeast portion, however, is the area that attracts visitors, with its low, rugged mountains, magnificent scenery, and numerous small ponds. One of the more notable features on the Unit are the rockslides (hence the French term “deboullie”) visible along the shoulders of Deboullie and Gardner Mountains. These areas, along with the steep cliffs, are also home to a number of rare plants. The steep slopes also contain protected pockets of old-growth timber.



Prior to the initial acquisition in 1975, the State of Maine held 1,000 acres of unlocated interest in the township. These publicly held “original reservation” acres were established in the late 1700’s and early 1800’s when much of the state (then part of the Commonwealth of Massachusetts) was surveyed in preparation for future land sales. Approximately 1,000 acres in each township were held as “school” and “ministry” lots in anticipation of future settlements. In Deboullie Township, these acres were never formally located on the ground. In 1975, the then Bureau of Public Lands acquired Great Northern Nekoosa Corporation’s 14,099-acre interest in the township as part of a larger land trade involving other properties in the state. Two similar trades took place in 1984 and 1985, including the acquisition of interests held by the Pingree Heirs (1,350 acres) and Prentiss & Carlisle (5,242 acres) which completed the state’s current ownership.

Most of the township is covered by a healthy and productive forest with a history of growing excellent quality timber. Harvesting within the township has been recorded as far back as the mid-1800’s, with heavy logging in the late 1950’s and 1960’s that included river drives down the Red River. A well-established road system resulted from this activity and has been used by visitors to the property ever since. Timber management on this Unit has been ongoing with a goal to restoring or enhancing the natural forest environment, while producing valuable forest products.

Red River Camps, a private commercial sporting camp under lease with the Bureau, is located on Island Pond, and caters primarily to fishermen and hunters.

There are 29 public campsites, most of which are located close to the public road system and receive considerable use. Although some of the ponds are accessible by vehicle, others are limited to foot or boat access only. Public use of these areas has been generally low due to access limitations.

Preferential harvesting of trees prior to State ownership created an imbalance of timber types throughout the forested portions of the Unit. This has limited the diversity of wildlife and wildlife habitat. Recent and future efforts to provide a multi-aged forest, rich in late successional character (more mature trees) will increase habitat potential over time.

The fisheries in Deboullie are considered exceptional. Wild brook trout dominate most of the ponds, and four of the ponds are habitat for the rare blueback trout. The outstanding fishery draws many visitors to the Unit, while others enjoy hiking Deboullie Mountain or just camping along the shorelines of the ponds.

During the winter months the public road system in the Unit provides a connector snowmobile trail to the Interconnected Trail System (ITS). The Unit has otherwise been a winter destination for those who wish to enjoy Deboullie's scenic beauty in a winter setting.

2. Resources and Management Issues

Natural and Geological Resources

Geology and Soils. Many of Deboullie's unusual features can be attributed to its geologic history and exposed bedrock (Seboomook Formation). While this formation is widespread in northern and western Maine, the bedrock on the Unit is unique. Fossils and stratification in the Seboomook Formation's dark gray slate indicate that it was probably deposited in deep water during the early Devonian Period 370 million years ago. At that time, high-temperature molten rock forced its way through a large belt of metamorphosed mudstone. The intrusion cooled into a granite-like rock known as the Deboullie Stock. When the Deboullie Stock cooled, it combined with the mudstone to form "hornfels," an extremely hard contact metamorphic rock. Hornfels forms the peaks and ridges within the Unit, demonstrating its high resistance to erosion.



Deboullie Mountain's sheer cliffs were carved by glacial activity. Repeated movement by glaciers eroded the softer slate and sculpted deep, steep-sided valleys. Talus slopes formed when the freshly carved vertical cliffs were exposed to the elements. Without vegetation to stabilize the slopes, the steepest areas crumbled to form boulder fields that continue deep into the neighboring ponds.

The dominant surface deposit on the Unit is till - unsorted material moved by glaciers, averaging about 3 feet in depth - with the heaviest deposits found in the lowland areas. Patches of bedrock are exposed on some of the steeper granitic slopes. Talus slopes are common where these slopes have been eroding. Some slopes support vigorous moss and lichen communities, while others have limited vegetation. The soil pH is quite acidic throughout the Unit

Hydrology and Water Quality. The Deboullie Unit encompasses three major watersheds: Perch, Togue, and Mud Ponds flow northwest to the Allagash River. Fifth and Sixth Pelletier Brook Lakes flow northwest to the St. John River. Gardner, Deboullie, Black, and Island Ponds flow southeast to the Red River, and then to St. Froid Lake. The larger ponds are considered oligotrophic - deep, cold, low-nutrient waters with high oxygen levels and limited aquatic plant growth. The smaller ponds are often mesotrophic or eutrophic - more shallow and warm waters with low oxygen levels and abundant organic material. The chart below lists the hydrologic features for many of the lakes and ponds on the Unit.

Water body	Acres	Maximum Depth (ft)	Direct drainage area (sq. mi.)	Dam?	Trophic status	pH
Black Pond	147	90	0.57	No	Oligotrophic	7.5
Crater Pond	19	6	0.49	Yes	Mesotrophic	7.3
Deboullie Pond	277	92	1.61	No	Oligotrophic	7.7
Denny Pond	28	33	0.24	No	Mesotrophic	7.6
Fish Pond	4					
Galilee Pond	8	27	0.15	No	Mesotrophic	7.4
Gardner Pond	283	120	2.27	No	Oligotrophic	7.8
Island Pond	34	44	0.23	No	Mesotrophic	7.1
Little Black Pond N	8	12	0.20	No	Mesotrophic	7.3
Little Black Pond S	9	8	0.05	No	Eutrophic	6.8
Mud Pond	56	3		No	Eutrophic	
Perch Pond	24	15	0.35	Yes	Mesotrophic	
Pushineer Pond	64	52	0.33	No	Mesotrophic	7.6
Stink Pond	13	5	1.06	No	Eutrophic	
Togue Pond	341	85	1.83	No	Oligotrophic	
Upper Pond	15	18	0.27	No	Mesotrophic	7.1
5 th Pelletier Bk. Lake	29	5		No	Eutrophic	
6 th Pelletier Bk. Lake	22	4	1.41	No	Eutrophic	

Wetlands. The Deboullie Unit includes 719 acres of wetlands. Forested wetlands account for 470 acres, while the remaining 249 acres are open wetlands. Most of the ponds on the Unit have steep sides. As a result, wetland areas tend to occur along the small drainages and in isolated pockets.

Ecological Reserve. The Deboullie Ecological Reserve is a microcosm of the landscape of northern Aroostook County, with lakes, ponds, low mountains, and stream valleys providing a variety of physical settings. Fire and logging have both played a part in the reserve's history. However, because of steep slopes and lakeshores, much of the Ecological Reserve has received

little cutting since the 1960's, except for recent Bureau harvests in the northwest and northeast corners.

The Ecological Reserve encompasses the entire shorelines of eleven ponds with surface waters totaling almost 900 acres. The ponds include Deboullie, Gardner, Pushineer, Big Black, and Little Black. Blueback trout (arctic charr), an unusual variety of trout, occur in several of the lakes. Typical pond shores have slopes that come steeply into the pond basin in an abrupt transition from aquatic to upland habitats.

The mountains ringing the lakes include spruce slope forests, northern hardwood forests, and exposed talus, reflecting the variety of exposures and slopes. The steep slopes of Deboullie and Black Mountains support several stands of old-growth spruce, some over 200 years old. Though uncut, all have been heavily damaged by budworm and subsequent windthrow. The ridges and upper slopes on Black Mountain and Whitman Mountain support mature Beech – Birch – Maple Forests, with trees over 20 inches in diameter, fallen trees, and canopy gaps. The Labrador-tea Talus Dwarf-Shrublands on Deboullie and Gardner Ponds are particularly noteworthy, with similar communities found in only a few other places in the state. Away from the ponds and their hills are several broad stream valleys with extensive mature cedar forests along the drainages. The cedar forms a dense canopy over sedges, sphagnum, and boreal herbs.

Thirty-three permanent monitoring plots were established within the Deboullie Ecological Reserve in 2003. These plots will be revisited once every ten years.

Ecological Processes. Spruce budworm played a prominent role in forest disturbance on the Unit. By preferentially selecting balsam fir as its host, spruce budworm effectively decreased the amount and quality of fir throughout the Unit, as well as the entire region. The most recent outbreak occurred in the 1970's and 1980s. Along the exposed ridges the budworm damage caused larger gaps where there was exposure to wind and weather events. These gaps increased the complexity of forest structure and added to the diversity of microhabitats for plants and animals.

The forested communities on the Unit show evidence of typical small gap disturbances from ice, windthrow, and natural tree mortality. Some of the spruce-fir forest areas have large areas of blowdown.

The steep talus slopes at Gardner and Deboullie ponds hold snow and ice in their shaded crevices year-round. Plants growing near this "ice-box talus" often bloom up to a month later than their counterparts growing in other areas of the Unit. The cool microclimate may also explain the presence of Maine's only population of arctic sandwort (*Minuartia rubella*, pictured right), which prefers cool, calcareous, rocky areas.



Natural Resource Management Issues

- When designated in 2000, the Ecological Reserve incorporated a popular public use area with roads and recreation facilities that require more active management than is typical of Reserves.
- A proposal to expand the current Reserve area an additional 5,000 acres (to include most of the areas recommended in the 1998 McMahan report) has been submitted to the Bureau.

Historic and Cultural Resources

The Deboullie Unit is 12 miles from the nearest major river, a distance that probably precluded major settlement by Native Americans in the area. These earliest settlers likely used the area for hunting and fishing. An old spear found in the bottom of Island Pond now hangs in the Red River Camps as evidence of this past use.

The first European use of the land took place in the mid-1800s, when white pine and spruce were cut along the streams. The township lines were drawn in 1845 and 1848, and a surveyor writing in 1886 remarked that the best white pine had been removed by that time, though a 1922 inventory remarks that little timber appeared to have been cut prior to 1908. The dam on Pushineer Pond and two mills were apparently built between 1910 and 1920. Great Northern Paper Company purchased a majority of the township in 1947 and cut most of the softwood and the higher quality hardwood in the 1950s and early 1960s. There is also evidence that GNP managed pulpwood on the township and moved pulpwood logs down the Red River (*pictured*).



Sometime before 1900, Whitman (of Whitman Chocolates) built a cabin on the island in Island Pond. A few years later, Red River Camps was constructed on the north shore. It is said that one of the owners of these camps in the early 1900s brought with them a tutor for their children, a barber, a guide, and a piano player for evening dances. Though originally built as a private camp, it now functions as a commercial sporting camp facility

Historic-Cultural Resource Management Issues

- Past uses of this area includes a rich history of recreation and logging, providing opportunities for interpretation.
- Native Americans likely used the area for hunting and fishing, and there is the potential for artifacts from this activity to be present on the Unit.

Fisheries and Wildlife Resources

Fisheries and wildlife resources within the Deboullie Unit include several distinct elements. The native fishery, including brook trout and blueback trout (arctic charr, a species of Special Concern), is a major contributor to the area's popularity and use. The Unit also provides a



mosaic of riparian areas, potential deeryards, and numerous small wetlands and bogs. However, habitat conditions are marginal due to a notable lack of stems under 30 feet in height, important to the more common species in northern Maine, including deer, moose, snowshoe hare, and grouse that depend on more diverse conditions. This is primarily due to the heavy harvesting that took place 40-50 years ago and the resulting abundance of even-aged timber stands. There is also concern about the increase in beech mortality throughout the Unit. Beech is important in providing food (mast) for bear and other wildlife dependent on its high nutrient value. Since 1999, Bureau of Parks and Lands field staff have used written guidelines (*Beech Management Guidelines for Mast Production*, 1999) for the management of American beech. The guidelines focus on maintaining beech as a component of hardwood stands across the landscape despite the challenges presented by the presence of the imported beech bark disease complex.

The Unit also provides habitat for two other rare animal populations: the northern bog lemming (listed as State Threatened), and a historic population of peregrine falcons (listed as State Endangered).

Fisheries. There are four landlocked Arctic charr ponds including Deboullie, Gardner, Pushineer and Black. Barrier dams have been constructed on Crater and Perch Ponds to prevent upstream movement of additional fish species that would compete with brook trout populations. The dam on Pushineer Pond was built as a water control structure to float pulpwood down the Red River. Recent repairs to the Crater Lake dam will maintain higher water levels and improve brook trout habitat in this pond.

Perch Pond is one of the few ponds that does not require fly fishing or the use of artificial lures. This makes the pond an ideal destination for families who prefer to fish with worms. Campsites on the shore have been improved to accommodate this use.

Black Pond, zoned by the Land Use Regulation Commission as a Remote Pond, has a history of providing a trophy brook trout fishery. Anecdotal observations from past years indicate significant use of Black Pond for this reason.

The Department of Inland Fisheries and Wildlife also maintains a stocking program on the Unit, notably the popular and successful stocking of landlocked salmon in Togue Pond. The Bureau has cooperated with Inland Fisheries and Wildlife on this stocking program. However, in accordance with its *Integrated Resource Policy*, the Bureau continues to favor habitat management that supports native species of fish and wildlife.

Riparian Zones. The shorelines of the ponds and major streams are managed as wildlife habitat, given their importance in providing food, nesting areas, and travel corridors. Minor streams are protected under zoning standards (P-SL2) of the Land Use Regulation Commission, and are likewise managed for their wildlife habitat.



Wetlands. The small, scattered wetlands in this township offer few opportunities for active management. However, they represent important elements of habitat diversity and are included as part the Bureau’s riparian management program.

Deeryards. There are no documented deer wintering areas within the Unit. However, several areas fall under the Bureau’s Cooperative Deeryard Agreement with Inland Fisheries and Wildlife because of their habitat potential, including the softwood dominated stands along Fifth Pelletier and Rocky Brooks near the Ecological Reserve boundary. These areas will be actively managed under the Agreement to enhance the softwood cover. The softwood area along Rocky Brook where it extends into the Reserve will not be actively managed, but will be monitored for any deer wintering activity.

Fisheries and Wildlife Management Issues

- The diversity and population of wildlife on the Unit have not yet reached their potential due to an imbalance of age classes.
- Enhancing or maintaining habitat conditions favorable for the blueback and wild brook trout populations continues to be of importance.
- The recently repaired barrier dam on the outlet of Crater Lake is on the boundary of the Ecological Reserve, although it was constructed many years prior to this designation.
- The Pushineer Pond dam, also within the Ecological Reserve boundary, is important in maintaining current water levels for boat travel between Pushineer and Deboullie Ponds. It was constructed approximately 50 years ago for log drives.
- The dam on the outlet of Perch Pond, which provides a barrier to unwanted fish species, is in need of repair.
- There are no deer wintering areas on the Unit, but stands along Fifth Pelletier and Rocky Brooks hold potential for providing suitable cover.
- The increase in beech mortality is a concern because of its importance as a food source for bears and other wildlife.

Recreation and Visual Resources

Recreational uses on the Unit are associated with the ponds adjacent to public use roads and with Deboullie Mountain, a hiking destination. The Bureau administers an ongoing recreation program for this Unit that includes a staff person and budget for maintaining public use areas. One of the challenges of this program has been to manage public use consistent with the remote and natural character of the area. Total public use, as reported by North Maine Woods, has averaged over 6,000 visitor days since 1987, a 12% increase over the period from 1977-1987. Public use over the last several years has averaged closer to 5,500 visitor days.

The Bureau manages 29 campsites on or near Togue, Denny, Perch, Upper, Pushineer (*pictured right*), Deboullie, and Gardner Ponds. Twenty three of these sites are drive-to, and four are located in the Backcountry





area where access is by foot or by water (*Deboullie Pond site pictured*). Tent platforms are located on the Denny and Togue Pond walk-to sites, although these sites receive limited use. All campsites are authorized for open fire use, although there has been discussion about making the more remote sites “permit only.” Although camping is allowed in other areas of the Unit, open fires are not permitted except at authorized sites.

In addition to the single party sites, a site on Perch Pond was recently improved for use by large groups, providing the only site suitable for that use on the Unit.

Red River Camps, a traditional Maine sporting camp located on Island Pond caters primarily to fishermen and hunters. The facility is privately owned and operated under a lease from the Bureau. The public can utilize lodging, meal, canoe rental, and guide services at Red River Camps for a fee, based upon availability.

Five boat launching sites are located on the Unit: Togue, Perch, Pushineer, and Deboullie Ponds are suitable for trailered boats, although low water conditions often limit size. A hand carry only site is located on Sixth Pelletier Brook Lake. Another hand-carry site is located on Island Pond within the area leased by Red River Camps. The Camps, along with other outfitters and members of the public, store canoes by permission of the Bureau on many of the remote ponds throughout the Unit.

The land area north of the public access road system that surrounds the ponds, including Deboullie and Gardner Mountains was designated as a Backcountry Recreation area in the 1987 Management Plan. The Backcountry abutted the General Recreation area along the road that included the drive-to public use sites. The backcountry designation at that time permitted occasional snowmobile use and timber harvesting within limited areas. This area was subsequently designated as an Ecological Reserve in 2000, including the above-mentioned General Recreation area. Timber harvesting within the Reserve was discontinued, but drive-to access continued as before, along with snowmobile access to the ponds within the Backcountry.

Deboullie Mountain is a popular hiking destination. A drive-to trailhead is located near the campsites on Deboullie Pond. From there it is a three-mile hike to the summit. There is an opportunity to develop a loop trail that would include both Deboullie and Black Mountains, which



would lessen the impact on the Deboullie Mountain trail in need of repair. A former Maine Forest Service (MFS) fire watch tower is located on the summit and is used as a repeater station. The Bureau took possession of the tower several years ago with the intention of installing safety features to make it suitable for hikers wishing to take advantage of panoramic views not available on the ground. Other structures near the fire tower are still in place, including the old warden’s cabin, which are in poor condition.

Another 5 ½ miles of maintained hiking trail are located within the backcountry area, providing a loop option around Deboullie and Pushineer Ponds, and foot access to Black, Little Black, Gardner, and Galilee Ponds. There are informal, non-maintained trails to the other ponds.

Winter use in Deboullie consists primarily of snowmobiling. An important “connector trail,” part of the State’s Interconnected Trail System (ITS), follows along the public road system between the two main access points on the Unit, and is the only maintained trail on the Unit. This trail provides an important connection to the ITS system north and east. The Unit is also a destination for visitors wishing to enjoy its scenic beauty and remoteness, by traveling off trail across the public use areas and onto the ponds (*Gardner Pond pictured above*).



Recreational ATV use does not occur on the Unit as it is not a permitted within the North Maine Woods system.

Visitors to Deboullie must pass through the North Maine Woods gate system because the roads to and from the Unit are entirely on private lands. Checkpoints are maintained near St. Francis and Portage where visitors pay day use and camping fees. The camping fees are returned to the Bureau, and are used to support the recreation program on the Unit. The day use fees are retained by the NMW.

Visual Considerations

The scenic qualities contribute significantly to the uniqueness and remote character of the Unit. Most of these values are associated with the low mountains and ponds within the Backcountry Recreation area, although these attributes exist, to a lesser degree, in the lower elevation areas north of Black Pond and south of Togue Pond.

Foreground views as seen by visitors from public access roads and use areas are maintained to protect the quality and character of the natural surroundings. Enhanced views of the ponds and mountains along the access roads are under consideration for Togue Pond, Whitman Mountain, and interior portions of the Backcountry recreation area.

Recreation and Visual Management Issues

- When designated in 2000, the Ecological Reserve incorporated a popular public use area with roads and recreation facilities that require more active management than is typical of Reserves.
- Camping use at the Togue Pond west site is at times made difficult due to boaters and fisherman parking vehicles and trailers on the site.
- Soil stabilization is needed on the Togue, Denny, and Upper Pond campsites.
- There have been requests for a campsite along the public access road that would accommodate a camper-trailer.

- Better parking facilities are needed at the boat launching sites on Togue and Perch Ponds. Campsite parking improvements are needed on Denny, Togue, Perch, and Pushineer Ponds.
- The group camping area on Perch Pond needs to be formally designated as such.
- There is an opportunity to develop a hiking trail that includes Deboullie and Black Mountains to reduce use of the Deboullie Mountain trail.
- The Deboullie Mountain trail needs repair to correct erosion and run-off problems.
- The former ranger cabin on Deboullie Mountain needs to be removed and the former fire tower upgraded for use as a viewing platform for hikers.
- There is off-trail snowmobile travel on some ponds. Snowmobilers riding to Gardner Pond use the portage trail from Deboullie Pond, which is within the Backcountry area.
- LURC zoning currently restricts vehicle access to Black Pond although this use continues, along with degradation of the road and impacts to the shoreline.
- There is discussion of making the more remote campsites, currently authorized for use of campfires, “permit only” sites.
- There are no authorized campsites at Black Pond, although informal camping with open fires does occur.
- There are opportunities to provide scenic vistas from public access roads to Togue Pond, Whitman Mountain, and the ponds and mountains from Pushineer Dam.

Timber and Renewable Resources

Deboullie Township was subject to repeated harvesting by private landowners from the mid to late 1800’s and through the 1950’s and 60’s. Responding to markets at the time, operators removed mostly softwood logs and pulp, along with higher quality hardwood logs for veneer. Modest salvage harvesting also took place in the 1970’s and 1980’s as a result of the spruce budworm infestation. Fir and spruce at risk to budworm damage were also harvested.

Today, 93% of the Unit is covered with forest, with 33% in softwood, 25% in hardwood, and 42% in mixedwood. Hardwoods tend to dominate the higher, better drained areas, while softwoods are more common along streams, mountain tops, and poor drainage areas.

<u>SOFTWOODS (%)</u>		<u>HARDWOODS (%)</u>	
Balsam Fir	16.6	Red Maple	6.5
Spruce	17.3	Sugar Maple	22.4
Cedar	14.2	Popple	2.0
Hemlock	<.05	Yellow Birch	10.9
Pine	<.05	Beech	4.8
Tamarack	0.7%	White Birch	3.7
		Ash, Hornbeam	0.3
		Other	0.5
TOTAL	48.9		51.1

The softwood consists mostly of fir and spruce, with lesser amounts of cedar, and is generally within the 30-80 year age classes. A significant portion of 100+ year old softwood s found on the steeper, higher elevation slopes of the mountains.

The hardwood consists mostly of sugar maple, yellow birch, beech, red maple, white birch, and poplar. This component overall reflects a more balanced age distribution between 30 and 100 years, with about one-third being more than 100 years in age. These older trees are primarily of low quality, left over from the years of harvesting the higher quality trees. However, increasing beech mortality from *nectria* (a scale and fungus condition) has been cause for concern necessitating periodic salvage harvesting of the beech.

Despite the many years of harvesting prior to State acquisition, the forest is in relatively good condition, free from disease (with the exception of the beech) and growing at expected rates. Softwoods that survived the spruce budworm infestation have recovered well. Any remaining mortality (mostly among fir) is presently beyond salvage. For the most part, pole-sized and small sawtimber stems (6"-14" in hardwood, 4"-10" in softwood) are of good quality, and have the potential in many areas to become high quality. Exceptions occur on the exposed sites or where there is a high density of softwood, where there has been considerable ice and snow damage. With respect to overall size and age-class distribution across the Unit, all types reflect a notable lack of stems under 30 feet in height. This condition has been of greater consequence to wildlife diversity than to the forest's ability to sustain a viable timber resource.

The Bureau currently manages 15,492 acres for timber production (regulated acres), significantly less than the 19,000 acres managed for timber prior to the designation of the Ecological Reserve in 2000. Many of these acres were within the area designated as Backcountry in the 1987 Management Plan, where "modified harvest" and "no harvest" areas were established. The "no harvest" designation applied to approximately 3,500 acres of otherwise operable timberland, whereby harvesting was not permitted for a 10-year period with respect to ecological reserve interests at that time.

Timber harvests have taken place on some portion of the Unit nearly every year since 1990, with some harvesting occurring in the early to mid 1980's. The total volume harvested since that time has been nearly 50,000 cords, consisting mostly of softwood studwood (63%) and hardwood pulp (35%). Harvest levels have only been at 50% of the sustainable limits determined for this Unit.

Timber Management Issues

- There is an imbalance of age classes within the forest stands on the Unit, with a less than optimal number of trees under 30' in height. The Bureau's forest management goal has been to manage for a larger percentage of multi-age forest.
- The high mortality of beech has and will continue to have a significant impact on the hardwood component on the Unit.
- There is interest in developing scenic vistas along the public road system, allowing for better views of the ponds and surrounding mountains.

Transportation and Administrative Considerations

Public Access Roads

Public vehicle access to the Unit has changed significantly since adoption of the original management plan in 1987. At that time, access was only available from the northwest, through the North Maine Woods checkpoint on the St. Francis Road. In 1997 access from the southeast became available from the Fish River Road, through the Fish River checkpoint near the Town of Portage. Since then the Bureau has maintained both access points. Although there was concern about the potential impact a second access point would have on public use levels, there have been few problems as a result. For many regular visitors to the Unit, the Fish River Road provides a more convenient alternative to the St. Francis Road. The St. Francis Road (*pictured*) continues to be the primary access. Travel on any of these roads to the Unit is subject to rules established by the North Maine Woods, as they are privately owned and used for commercial purposes. Some visitors have voiced concerns about the payment of day use fees to NMW when their use of this system is solely to gain access to the Unit. Others dislike NMW's restrictions on ATV and biking use. The Bureau continues to work in partnership with NMW on a variety of issues concerning the use of public lands within this system.



Along with the main access road, the Bureau maintains public use roads to popular sites on the east side of Pushineer and Deboullie Ponds from the Red River Road. Access to this area has required “fording” the Red River which is environmentally undesirable. A solution to this fording has been anticipated since adoption of the 1987 management plan. Alternatives have included bridging the Red River at the current crossing, and reconstructing Pushineer Dam west of the crossing to allow vehicle travel across the dam. A final decision will require the cooperative efforts of the Department of Inland Fisheries and Wildlife, the Maine Natural Areas Program, and the Land Use Regulation Commission.

Just before crossing the Red River, the public use road provides access to Island Pond and Red River Camps.

Public vehicle access is maintained to Upper, Denny, Togue, and Perch Ponds, and Fifth Pelletier Brook Lake with work needed on several of these roads to correct ongoing environmental concerns. The road to Fifth Pelletier Brook Lake is a management road that has been left open for vehicle access, although it is currently in poor condition. Some maintenance of this road will take place in conjunction with future harvesting. Roads developed for winter harvesting have been discontinued across the Unit.

Under LURC regulations two-wheeled vehicle access to Black Pond is not permitted within ½ mile of the pond due its zoning as a Remote Pond. However, consistent with historic use before this zoning went into affect, vehicle access to the pond from the west side has continued. The ½ mile point is located on the abutting landowner.

Administrative Considerations

A Bureau camp was constructed near Togue Pond in 1988, and provides a base of operation for the recreation management at Deboullie and nearby areas. The camp is occasionally used by DIF&W personnel and other groups doing research.

Red River Camps is a commercial sporting camp that has been in operation since early 1900's, and was under lease with the Great Northern Paper Company prior to acquisition of the township in the 1970's. The structures are owned by the operators and the land is leased from the Bureau. This lease is maintained in accordance with statutory guidelines that allow the continuation of the lease (and others around the state), provided certain terms and conditions are met by the lessee. The camps and related services are available to the public for a fee when space permits. The Bureau has also relied on the owners and their guests to provide stewardship on the Unit. A gate owned and maintained by Red River Camps restricts vehicle access to the lease area during the winter months.

Transportation and Administrative Management Issues

- The 1987 Management Plan identified one public vehicle access point (St. Francis Road); two access points have been managed for since 1997.
- An alternative to the current fording of the Red River to obtain vehicle access to public use areas at Pushineer and Deboullie Ponds needs to be developed.
- A number of visitors continue to object to the payment of fees to the North Maine Woods.
- Environmental issues with portions of the road system and public use areas need to be addressed.

3. Resource Allocations and Management Recommendations

The following resource allocation categories are listed in the order they appear in the allocation summary on page 10 of the Integrated Resource Policy.

SPECIAL PROTECTION AREAS

Special Protection as a Dominant Use. The Special Protection allocation as a dominant use will apply to the following areas:

- The designated Ecological Reserve, which primarily includes the land around Deboullie, Whitman, and Gardner Mountains.
- An Exemplary Natural Community (Northern White Cedar Swamp) on the east end of Mud Pond

Special Protection Management Recommendations

- Resolve the current Ecological Reserve boundary conflict where it includes developed recreation areas (allocated as General Recreation in the 1987 Management Plan) along the public access road between Togue and Deboullie Ponds. Work with MNAP towards the modification of this boundary.

- The use of the portage trail between Deboullie and Gardner Ponds by snowmobiles will be allowed to continue as this use pre-existed the designation of the Ecological Reserve, and has minimal impact on the values being protected in this area.
- Monitor public use and its impacts on the values in the Ecological Reserve, particularly where there is trail access to the talus slope on Deboullie Mountain.
- Monitor the water levels on Crater Lake for impacts to the surrounding shoreline within the Ecological Reserve resulting from the recently-repaired barrier dam.
- Timber management near the area identified as an exemplary natural community outside the Reserve area will be planned in consultation with the Maine Natural Areas Program.

FISHERIES AND WILDLIFE AREAS

Wildlife Management as a Dominant Use. Wildlife Management allocations as a dominant use will apply to the following areas:

- The shorelines (riparian zones) of waterbodies, primary and secondary streams, and wetlands that are not already allocated for Special Protection. Within Special Protection areas, wildlife riparian management on shorelines will be a secondary use.
- The softwood areas along or near Rocky and Fifth Pelletier Brooks that are not within the Ecological Reserve.

Wildlife Management Recommendations

- Continue to implement forest management practices that provide a greater diversity of age classes and species for wildlife habitat purposes.
- Manage the softwood component near Fifth Pelletier and Rocky Brooks that are not within the Ecological Reserve to enhance its potential as deer wintering areas. Include this area in the Bureau's Cooperative Deeryard Agreement with Inland Fisheries and Wildlife. Where the softwood cover extends into the Reserve on Rocky Brook, the area will continued to be monitored for any wintering activity.
- Work with the Department of Inland Fisheries and Wildlife to enhance habitat for the blueback and wild brook trout populations.
- Work with the Department of Inland Fisheries and Wildlife, and the Maine Natural Areas Program on the management and maintenance of dams at Pushineer, Crater, and Perch Ponds.
- Monitor the water levels on Crater Lake for impacts to the surrounding shoreline within the Ecological Reserve resulting from the recently-repaired barrier dam.

RECREATION AND VISUAL AREAS

Recreation Management Allocations. Recreation Management and Visual allocations will apply to the following areas:

- The land around Deboullie, Whitman, and Gardner Mountains will be allocated as a Non-mechanized Backcountry Recreation Area, which will be managed as a secondary use with respect to the Ecological Reserve.

- The Deboullie public access road will be allocated as Developed Class I Recreation Areas.
- Drive-to public use areas along the Deboullie public access road from the west side of Togue Pond to Deboullie Pond will be allocated as Developed Class I Recreation Areas. Adjoining areas needed to provide site improvements to these drive-to areas will also be allocated as Develop Class I Recreation Areas. The Maine Natural Areas Program will assist in locating these areas where they abut the Ecological Reserve.
- The shorelines of ponds not within Special Protection and Backcountry areas will be allocated as Remote Recreation. This will be a secondary allocation where Wildlife Management is the dominant allocation.
- Public use road corridors, including the road into Fifth Pelletier Brook Lake, and all public use areas will be allocated as Visual Class I areas (foreground views).
- The lower elevation areas north of Black Mountain and south of Togue Pond will be managed as Visual Class II areas.

Recreation and Visual Management Recommendations

- The existing use of the portage trail by snowmobiles within the Backcountry area between Deboullie and Gardner Ponds will be allowed to continue (*see page 19 of the Integrated Resource Policy*).
- Develop a three-mile section of new hiking trail that connects Deboullie and Black Mountains, providing a loop alternative to the Deboullie Mountain trail.
- Make repairs to correct erosion and runoff problems on the Deboullie Mountain trail.
- Remove the old fire warden's camp and improve the tower on Deboullie Mountain to make it safe and usable for hikers. Provide a picnic shelter at the site of the old camp.
- Correct ongoing/future environmental problems within public use areas.
- Reconfigure the Togue Pond West campsite area to better delineate the camping and boat access areas on the site.
- Replace the little-used tent platforms on the walk-to sites at Togue and Denny Pond with Adirondack shelters. Explore the feasibility of using these structures in other areas.
- Replace some or all of the remaining 12 "wet willie" backcountry toilets with pit privies. Consider replacing pit privies at the heavier used campsites with vault-type toilets.
- Make parking improvements to the Togue Pond boat launch site.
- Formally designate the group use campsite on Perch Pond.
- Formally designate the public access road system as a connector snowmobile route to the ITS system.
- Reevaluate the fire authorized sites in remote locations to determine if they should be designated as "permit only" sites.
- Barricade the road to Black Pond from the east at a location that would result in the least disturbance to the Ecological Reserve, in consultation with the Maine Natural Areas Program, LURC, and users of the pond. Discontinue and remove the roadbed from the barricade to the shoreline. Develop a turnaround, parking, and campsite with appropriate signage in conjunction with this use.
- Change the campsite at the foot of Deboullie Mountain next to the hiking trail to a day-use picnic site.

- Look for potential scenic vistas along the public access roads at the west end of Togue Pond, near Perch Pond, and around Pushineer Dam where there are views to the ponds and mountains within the Backcountry Recreation Area.

TIMBER MANAGEMENT AREAS

Timber Management as a Dominant Use. The Timber Dominant allocation (except where otherwise noted) will apply to the following areas:

- Most of the area not allocated as an Ecological Reserve will be allocated for Timber Management as a dominant or secondary use.

Timber Management Recommendations

- Continue the primary goal of managing the forest for a wider diversity of age classes and species.
- Identify and favor disease resistant beech as a means to address the increasing mortality within these stands.
- Provide additional view sheds from the public access roads near Togue, Perch, and Pelletier Ponds.
- Work in consultation with the Maine Natural Areas Program where harvesting may occur near the White Cedar Swamp Natural Community on the east end of Mud Pond.

TRANSPORTATION AND ADMINISTRATIVE CONSIDERATIONS

Management Recommendations

- Maintain the Deboullie Road (Red River Road) to the St. Francis Road as the primary access road system on the Unit.
- Provide a travel surface over the Pushineer Pond dam and discontinue the fording of the Red River. Maintain water levels at the dam site in a manner acceptable to Inland Fisheries and Wildlife. Planning and construction will be done in consultation with DIF&W, the Maine Natural Areas Program, and the Land Use Regulation Commission. Should this option prove not be feasible, other options to fording the river will be explored.
- Upon completion of the dam upgrade, repair the road between Pushineer Pond and Deboullie Pond to correct environmental issues.
- Summer management roads constructed for timber harvesting activities may be left open for summer use; winter roads developed for that purpose will be discontinued once harvesting is completed.
- Improvements to the Fifth Pelletier Brook Lake Road, for both timber and recreation management purposes, will be made as funds become available.

Eagle Lake Unit

1. Character of the Landbase

The 24,083-acre Eagle Lake Unit, located near the Town of Eagle Lake, surrounds the eastern half of the lake by the same name, and is the largest Bureau-managed Unit in the Northern Aroostook Plan area. The Unit is a popular destination for four season recreation. Most of the forestland surrounding the lake is managed primarily for timber growth.



The Unit consists of the entirety of Township 16 Range 6, including 960 acres of original public lots, and an acquisition of 16,985 acres as part of a state-wide land trade with the Pingree heirs in 1984. There are 5,601 acres on T16 R5, including a 252-acre original public lot on the northeast shore of Square Lake (Rocky Point), and the 83-acre Parker Bog parcel that is part of the Cross Lake Fen. The 93-acre Clover Hill Lodge property in the Town of Eagle Lake was acquired by the Bureau in 1993 and is accessed from the Sly Brook Road. An additional 441 acres

(former Robert Martin property) in the Town of Eagle Lake south of the Fish River was acquired in 1996 and includes frontage on the river.

Eagle Lake is the centerpiece and principal destination on the Unit. This L-shaped body of water is 5,581 acres in size, and extends over three townships for nearly 18 miles. More than half its length and most of its acres are located within the Unit boundary. The lakeshore west of the Unit includes several hundred camps and year-round residences. Within the Unit the shoreline is essentially undeveloped with the exception of 5 residential camplots and a commercial sporting camp on the Thorofare. Recreational use of the lake is also divided, with pleasure boaters and water-skiers concentrated west of the Unit, and anglers and campers more common within the Unit boundary. Other fisheries, including Blake Lake to the north and the Thorofare (between Eagle Lake and Square Lake) are also important to the Unit. Hunting, bear baiting, and snowmobiling are common.

The landscape within the Unit is gently rolling, with less than 600 feet of elevation change from the highest to lowest point. Gentle to moderate side slopes and small wetland areas are characteristic features. Two exceptions include the steep slopes with small ledge outcroppings in the northwest corner of T16 R6 and a 1000-acre spruce flat and bog complex on T16 R5 between Square and Eagle Lakes. The Unit provides a wide diversity of forest types, with a good mix of tree species and height classes on relatively fertile forestland. The Bureau has conducted timber harvesting activities nearly every year since 1984, as had the previous landowner.

2. Resources and Management Issues

Natural and Geological Resources

Geology and Soils. Ocean sediments from the formation of the North American continent 440 and 350 million years ago (the Silurian and Devonian periods) comprise most of the bedrock on the Unit. The Seboomook Formation is found in the western portion while the Fish River Lake Formation makes up the central portion. The Winterville Formation, which consists of basalt (fine grained, dark, ocean crust volcanic rock), is exposed in the southeast corner. Surface deposits on the Unit are primarily till reflecting Maine’s glacial heritage, with swamp, marsh, and bog deposits found in low-lying wetland areas.

Hydrology and Water Quality. Eagle Lake is 5,581 acres in size and drains an area 90 square miles in size. Its maximum depth is 136 feet, with an average pH of 7.2. Water quality studies conducted by Inland Fisheries and Wildlife determined a pH of 7.3 at that time. The potential for nuisance algal blooms is moderate. Blake Lake is 89 acres in size and drains 1.6 square miles. Its maximum depth is 17 feet. Water quality measurements have not been taken on this lake. The entire Unit drains into Eagle Lake and the Fish River, which are part of the St. John River watershed.

Wetlands. There are 2,665 acres of wetlands within the Unit with 1,083 of open wetlands, most of which are part of a large fen complex on the eastern half of the Unit. There are numerous small open and forested wetlands in other areas.



Ecological Processes. Eagle Lake channels large gusts of wind to the surrounding forests, resulting in frequent blowdowns. This natural process adds both vertical and horizontal structure to the forest. The abundance of large, downed woody debris has created den sites for wildlife and contributes nutrients to the forest floor. The resulting openings in the canopy have allowed suppressed trees and seedlings to take advantage of the sunlight, adding younger trees to the canopy.

Rare Plant Species. A population of Wiegand’s sedge (*Carex wiegandii*) is located within the Unit. In December of 2005 a decision was made to no longer track Wiegand’s sedge as a rare species because more populations have been documented in recent years. Large populations of this sedge occur along the edge of the peatland system between Eagle Lake and Square Lake where it thrives on the “peaty” substrate.



A plant survey of the Eagle Lake area in 1990 revealed several populations of rare lichens (*Stenocybe minutissimum*) growing on red oak trees at Oak Point, and on mature sugar maples northeast of Blake Lake (*pictured right*). This “stubble lichen” was newly-discovered in 1909, and represents only the third collection of this species in the northern hemisphere.

Parker Bog Parcel

This 83-acre parcel is part of the Cross Lake Fen complex. The property is underlain by swamp, marsh, and bog deposits, with more than 50 acres in open wetland. Most of the parcel provides wading bird and waterfowl habitat. The dominant soils in Parker Bog are of the Vassalboro-Sebago-Cathro type. There are several exemplary features on the parcel including an extensive Patterned Fen Ecosystem, most of which lies outside the property. The “patterning” arises from low, parallel peat ridges alternating with wet hollows or shallow pools creating a ribbed appearance on the surface of the peatland. Fens tend to have higher pH levels than other wetland types. The pH range on this parcel is 4.5 to 4.9. Exemplary natural communities within the ecosystem include Low Sedge-Buckbean Fen Lawn and Sedge-Leatherleaf Fen Lawn. Moor rush (*Juncus stygius*), a rare plant (S2), is found in the open Low Sedge – Buckbean Fen Lawn portion. Wiegand’s sedge (*Carex wiegandii*) grows in the transition zone between the open fen and spruce swamp.



Square Lake (Rocky Point) Parcel

The 252-acre Rocky Point parcel contains about ¾ miles of frontage along the northeast shore of Square Lake. Most of the parcel is forested (235 acres), with 162 mixedwood acres. The bedrock consists of basaltic volcanic rock (Winterville Formation). Surface deposits consist of till and are of the Aurelie-Burnham-Daigle soil type. Rocky Point has 21 acres of wetlands with 3 acres in open wetlands. A bald eagle nest is located on Square Lake just outside the property.

Natural Resource Management Issues

- Harvests in areas identified as having rare lichens will be planned in consultation with the Maine Natural Areas Program.
- While this Natural Resource Inventory includes information based on available data and recent field surveys, the Unit has a broad array of natural community types. Further exploration of cedar seepage areas and pockets of mature hardwoods may yield rare plant species.

Historic and Cultural Resources

The Upper St. John River Valley website, devoted to the history and genealogy of the communities in this region, provides the following regarding the history of Eagle Lake, “The Town of Eagle Lake's first European settlers were Sefroid Nadeau, a Canadian Frenchman, and Richard Woods, an Irishman, who came in 1840. The name of the town is said to come from “the numerous white-headed eagles which frequented the place.” “When Major Hastings Strickland set out in 1839 with his soldiers for the northeastern border of Maine, they encamped on the border of an unnamed lake. They were impressed by the flock of white-headed eagles flying over the lake and decided to name it Eagle Lake.” Eagle Lake was organized as a plantation in 1856, and incorporated as a town in 1911.” Its history is indicative of how logging, agriculture, and the outdoors in general has helped to shape the character of this area.

The sporting camp facility known as Eagle Lake Camps were operated as a private club from 1890 until 1920, and not formally operated as a sporting camp until 1928 when they were sold to Saul Michaud who managed the facility until 1958. The camps were then sold to an investor, then sold to the current owners in 1963. The camps area a six-mile boat ride from the Town of Eagle Lake. Since its beginning the camps have attracted visitors for “fishing, hunting, boating, bathing, canoeing, hiking, dancing, playing tennis, or just resting” (excerpt from a brochure entitled *Eagle Lake Camps, In the Heart of the Most Beautiful Lake and Forest Region in New England, Mrs. Saul Michaud, Proprietor and Manager*).

Native Americans were also resident in this area, and were likely to have occupied the shoreline of Eagle Lake where there was a southerly exposure (see page 14 for a detailed summary).

Historic Resources Management Issues

- The shoreline on the west end of Eagle Lake near the Unit boundary may have been the location of Native American campsites. With a southerly exposure on a canoe-navigable lake, this would have been an attractive location.

Fisheries and Wildlife Resources

Wildlife. Wildlife habitat on the Unit is diverse in both age class and vegetation species mix, due to a history of frequent light harvests aided by the fertile soils. Mixedwood stands cover almost 50% of the Unit, with most stands between 25 and 100 acres, a good size range for many species of wildlife. Numerous brooks and beaver flowages add to the diversity. Beavers are active along the numerous small streams that feed into Eagle Lake, building dams to access the hardwoods they prefer to eat. When active, the beaver ponds have flooded the adjoining uplands. Where the hardwoods have disappeared near these ponds, the dams have been abandoned and new ones built in different locations - a common occurrence throughout the Unit. These abandoned ponds will eventually fill with sediment and transition back to uplands. The creation and abandonment of impoundments is a significant contributor to the mosaic of habitats.

Timber stands dominated by trees under 30 feet tall are numerous but small, except around the major bog complex on T16 R5. Stands where most trees are less than 10 feet in height are uncommon. With the exception of one small field near the west boundary of T16 R6, the old agricultural fields on the Clover Hill property provide the only open area on the Unit. These fields are periodically mowed to retain the open habitat.

Beech, a significant food source for bear and other wildlife, has sustained heavy damage and mortality from beech bark disease (*nectria*) over the past 20 years. Healthy beech 16 inches in diameter produces the greatest amount of mast, and is in short supply over most of the Unit. Since 1999, Bureau of Parks and Lands field staff have used written guidelines (*Beech Management Guidelines for Mast Production*, 1999) for the management of American beech. The guidelines focus on maintaining beech as a component of hardwood stands across the landscape despite the challenges presented by the presence of the imported beech bark disease complex.

Populations of upland game species are generally good, despite the popularity of hunting and bear baiting. Mammals common to the Unit (as well as northern Maine) include bear, moose, deer, and snowshoe hare. Ruffed grouse, geese, ducks, deer, moose, bear, and to a lesser extent snowshoe hare are all sought by hunters. The broad diversity of vegetation and habitat has been adequate to sustain populations of most non-game species.

There are no zoned deer wintering areas on the Unit. A previously zoned deeryard along the lower end of the Thorofare was dropped for lack of deer use, primarily because of habitat loss resulting from spruce budworm damage and heavy salvage cuts. Several areas show potential for deer winter cover, including areas along Bear, Halfway, Alec, and Miller Brooks, although these areas were also heavily impacted by spruce budworm. A significant softwood component is located in the Three Brooks area, though overflights failed to reveal any deer use. Moose, however, are abundant throughout the Unit, yarding and feeding in stands with numerous budworm openings. The areas having potential will fall under the Bureau's Cooperative Deeryard Agreement with Inland Fisheries and Wildlife.

The diversity of wetland types is reasonably good despite comprising only 3% of the Unit. The large wetland area between Eagle and Square Lakes, the 40-acre bog south of Eagle Lake, the numerous small bog areas south of Eagle Lake, and the abundant beaver flowages, both active and inactive, provide substantial amounts of waterfowl habitat. There are 813 acres of wading bird and waterfowl habitat concentrated in the large wetland to the east and along the major drainages.

Fisheries. The Unit is within the Fish River Chain of Lakes, well known for its coldwater fishery. Managing habitat conditions to maintain or enhance this fishery is important. Fish species documented in Eagle Lake include: brown bullhead, longnose sucker, white sucker, lake whitefish, slimy sculpin, lake chub, banded killifish, threespine stickleback, cusk, common shiner, golden shiner, rainbow smelt, yellow perch, round whitefish, ninespine stickleback, blacknose dace, landlocked salmon, brook trout, lake trout, creek chub, and fallfish. Lake trout were last stocked in 1999. Landlocked salmon were last stocked in 1996. Brook trout were last stocked in 1963. Eastern elliptio and eastern floater mussels have both been found in Eagle Lake, as has Appalachian brook crayfish. Blake Lake has banded killifish, cusk, pearl dace, northern redbelly dace, finescale dace, blacknose dace, and brook trout. Brook trout were last stocked in Blake Lake in 1945.

WATERBODY	SIZE (ACRES)	MAXIMUM DEPTH (FEET)	PRINCIPAL FISHERY
Blake Lake	128	17	Brook Trout
Eagle Lake	5,581	136	Salmon, Togue, Brook Trout
Square Lake	8,150	122	Salmon, Brook Trout

Blake Lake supports wild brook trout, several species of minnows, and cusk. Despite the relatively shallow water and uniform temperatures during the summer months, the trout

population is sustained by good supplies of cold spring water. The inlets and outlets are relatively unimportant for trout spawning, which takes place primarily near the shoreline and in spring fed areas.

Eagle Lake offers a varied coldwater fishery for trout, salmon, togue, cusk, and smelt. Spawning habitat is available in the outlet and in many inlets, and the Thorofare is an important salmon spawning and nursery area. Many of the smaller inlets, however, are blocked near their mouths by beaver dams which limit available spawning areas. This may be especially so for smelt, which are important forage for the larger gamefish species, and a sport fishery as well. The fishery in Eagle Lake also includes warm water species of yellow perch, hornpout, suckers, and minnows.

Square Lake, the largest in the Fish River chain of lakes, provides ideal habitat for landlocked salmon and brook trout, and has suitable spawning areas for each species. In particular, the lake's inlet from Cross Lake and its outlet (the Thorofare) provide primary spawning and nursery areas. For the most part, Square Lake supports the same fish species as Eagle Lake. Although an occasional togue may be caught in Square Lake, they are not present in numbers sufficient to support a principal sport fishery.

Fisheries and Wildlife Management Issues

- Though at present there are no zoned deer wintering areas on the Unit, historical deer use and areas with soil types favoring softwood provide the opportunity to increase suitable winter cover.
- The Unit is within the Fish River Chain of Lakes, well known for its coldwater fishery. Managing habitat conditions to maintain or enhance this fishery is important.

Recreation Resources

Recreation management on the Unit reflects the semi-remote, undeveloped character of Eagle Lake, which is a popular boating, fishing, and camping destination. There are 6 water access campsites on Eagle Lake (*Camp Cozy* pictured left, *Mad Rock* pictured right) and one located on the Thorofare. Most receive regular use throughout the summer season. There is potential for a drive-to campsite on the southeast shore of the lake, with access from the Square Lake Road. Blake Lake



provides a semi-remote trout fishing destination that is accessible by a four-wheel drive road. An informal campsite on the lake receives significant use, although the site is not authorized for open fires. There is also potential for a water-access campsite on Rocky Point on the Square Lake parcel, a former Maine Forest Service campsite. This location may also hold potential as a boat access site.



Hiking trails are of limited demand on the Unit. There is an informal trail along the west boundary of T16 R6 that leads to the so-called “west overlook,” which receives occasional use. A trail from the Three Brooks Cove campsite on the south side of Eagle Lake, to Three Brooks Mountain on private land was discontinued after the fire tower on the mountain was removed.

Recreational access to the Unit is commonly by boat from a Bureau-owned trailered boat launch site in the Town of Eagle Lake. This site is also used for overnight parking by boaters who camp on the lake, although there is some confusion as to whether such parking is an allowed use.

There are 25 miles of shared use roads that provide drive-to access to various areas within the Unit. These roads are principally management roads for timber harvesting, but are available for other motorized and non motorized uses as well. The Square Lake Road in the southeast portion of the Unit is the only “public access road,” which access to a number of camps on abutting private lands.

Winter activities on the Unit include a 12.5 mile section of regional snowmobile trail on the north portion of the Unit. The scenic rest area on Route 11, where it overlooks the lake and the Unit, is a popular snowmobile destination for those riding the ITS system within the region. There has also been interest in recent years in developing trails for cross country skiing and dog sledding. The site on the southeast corner of Eagle Lake, under consideration for development of a drive-to campsite and hand carry boat launch, also makes an adequate location for a snowmobile access point onto the lake.

Visual Resources

Preserving the scenic quality, particularly as viewed from the lakes, is an important component to the overall management regime for the Unit. Visual management in conjunction with timber harvesting and development of recreation sites have been made with regard to viewsheds as seen from Eagle Lake, Blake Lake, Square Lake, and the Thorofare.

Recreation Management Issues

- The undeveloped nature of the Eagle Lake shoreline gives the Unit a semi-remote character, and regular use of most water-access campsites suggests demand for this type of experience. Increasing the amount of boat-access camping, while maintaining the character of the lakeshore, should be further explored.
- Vehicle access over the two mile stretch of deteriorating road to Blake Lake has kept fishing pressure at moderate levels, though there is some regular use of this area and the adjoining campsite.
- Boaters camping overnight on the Unit are often concerned about the allowance of overnight parking at the state-owned boat launching facility in Eagle Lake.
- There is interest in developing cross country ski and dog sled trails on the Unit.

Timber and Renewable Resources

The forests on this Unit have a long history of timber management, and many acres have been harvested two to three times. Most harvests prior to State acquisition were conducted using the “diameter limit” method. By contrast, the Bureau usually marks the trees to be cut. During those

years, cutting was constrained by lack of pulp markets, especially for hardwoods. The resulting stands now show a wide diversity of tree species, and a healthy distribution of age classes. The height classes in limited supply range from 0-10 feet and 10-30 feet. The intensive harvesting creating these types of stands was limited to a couple hundred acres of spruce budworm salvage in the 1980s, and clearcuts in spruce stands on T16 R5 in the early 1970's, prior to State ownership. Though these sites are of moderately poor drainage, the presence of 18 inch diameter spruce stumps and scattered 90 foot tall residual pines indicate sufficient fertility a prerequisite for investing in "precommercial thinning." Some of this thinning was conducted in 1992. The largest forest opening on the Unit was catastrophic in origin, the result of a blowdown in September 1986. A thunderstorm downdraft touched down about a mile north of the mouth of the Thorofare and continued northeast almost four miles to the north end of Square Lake, gradually widening from 500 feet to nearly 1/2 mile as it went. Within the affected 600 acres (half on the Unit, half on an abutter) the destruction was 100% in both softwoods and in the more deeply rooted hardwoods. Most of this area has had adequate regeneration in the understory and since salvage of the blown-down new stands have become established. In 2006, 27 acres within a blowdown area in the northeast corner of the Unit were precommercially thinned.

Mixedwood is by far the dominant forest type. Softwood and hardwood stands generally are found as discreet pockets along streams or on high ground, surrounded by mixedwood acreage. The natural fertility of the soils on the Unit means that nearly all the forest is on productive land where regular timber harvests are practical, within the limits and consideration of other resource values.

	<u>T16 R6</u>	<u>T16 R5</u>	<u>UNIT TOTAL</u>
Softwood	27%	60%	35%
Mixedwood	55%	26%	48%
Hardwood	18%	14%	17%
	100%	100%	100%

Some of the mixedwood stands are found on land where limited drainage and moderate fertility are more suited to growing softwoods. The hardwood component of these stands is due to preferential harvest of softwoods in the past, fir mortality from budworm, or the hardwood species' natural advantage in height growth right after disturbance. Timber volume, as re-measured in an inventory completed in 1999, tends slightly to softwoods over hardwoods:

<u>SOFTWOODS (%)</u>		<u>HARDWOODS (%)</u>	
Balsam Fir	13.6	Red Maple	12.6
Spruce	19.0	Sugar Maple	12.5
Cedar	18.0	Popple	4.8
Hemlock	1.8	Yellow Birch	7.3
Pine	2.1	Beech	2,5
Tamarack	1.2	White Birch	2.6
		Ash, Hornbeam	1.0
TOTAL	56.4		43.6

Very large trees may be encountered (typically sugar maple or hemlock, although some stands are dominated by mature to over mature trees), the characteristic stand has a wide range of stem diameters present. The Unit-wide average (for all "merchantable" trees--those 5 inches diameter and larger) is 8.6 inches for softwood and 9.6 for hardwood. The average for balsam fir is only 7.4 inches. These diameters are smaller than on most other parcels managed by the Bureau, indicative of the substantial numbers of trees in the 5 to 7 inch diameter classes. Rather than being suppressed by taller trees, these pole-sized individuals are typically vigorous and growing well, though densely stocked on occasion. This excellent representation of mid-sized and aged trees presents ample opportunity for commercial thinning and for producing high-value forest products. In addition, most stands have good representation in the sapling size class, trees 1 to 4 inches in diameter, and in seedlings, trees smaller than an inch in diameter. Over the whole range of diameter classes, trees are generally healthy and vigorous. The spruce budworm epidemic in the 1970's and 1980's caused considerable mortality in fir (the budworm's preferred food), especially in the Halfway Brook--California Brook drainages, but surviving fir has generally made a complete recovery. In some stands much of the fir is mature, with butt rot and scattered blowdown evident. The white pine on the Unit shows a high incidence of blister rust, showing dead tops that otherwise would have been retained for further growth have been harvested as a result. The average quality among softwoods is fair on larger stems, and good to excellent on small to medium sized ones. The cedar component ranges from younger high quality trees to older poor quality stems.

The overall quality of the hardwoods is lower than the softwoods, typical of areas where historic markets have been geared towards sawlogs. In addition, beech bark disease has caused considerable damage and mortality in that species, to the point where any clean-barked, healthy beech merit retention for future mast production. Most of the better-drained sites hold sapling/pole-sized hardwoods of good form, typically sugar maple, among large old residuals of past cuts.

Timber harvests have been ongoing since 1984 with total volumes harvested from the Unit being approximately 111,000 cords. Approximately 46,000 cords of this volume was hardwood pulp. To date, only the Bigelow Preserve on Bureau lands has produced a larger volume of hardwood pulp. Harvest levels have been limited to 70% of the sustainable limits determined for this Unit.



Timber Management Issues

- Harvesting prior to State ownership and spruce budworm damage from the 1970's and 1980's has left a diverse but somewhat fragmented forest on the Unit. Sizable areas of tall, fully-stocked softwood to provide winter cover and travel corridors for deer are limited. Many sites more suited to softwoods are presently occupied by an abundance of low-quality hardwoods.
- The fertile soils found over most of the Unit and the widespread presence of 5-20 foot tall spruce-fir regeneration present both challenges and opportunities for overstory harvests and subsequent precommercial thinning.
- The Unit has a sizable volume of low-quality hardwoods left in past harvests due to lack of markets.

Transportation and Administrative Considerations

Access to the Unit. Currently there are 8 access points to the Unit via Routes 11, 161, and the Sly Brook Road. Two of the access points from the Sly Brook Road are maintained periodically under an ongoing road maintenance contract; two others are deeded right-of-ways. The remaining access points are across private lands, one of which is gated. The main public access point to the Unit north of the lake is the Bureau-constructed road through the Clover Hill Lodge property at the south end of the Sly Brook Road. The main public access road to T16 R5 is from the Square Lake campowners road originating from the Blackstone road system. The Square Lake Road is maintained periodically by the Bureau. The other access points do not receive any maintenance except in conjunction with harvest operations. The access point south of Eagle Lake is for winter use only. New road construction by the abutting landowner south of the lake has created new access opportunities. The interior road system is well developed, consisting mainly of summer roads north of the lake and winter roads south and east of the lake. The Alec Brook Bridge was replaced in 1998. Additional road improvements will occur in conjunction with upcoming timber sales and existing road maintenance contracts.

Camplot Leases. There are currently six camplot leases located on Eagle Lake, with four on T16 R6 and two on T16 R5. These leasehold interests originated with the previous landowner, and continue to be honored by the Bureau. Statutory requirements permit the leases to remain, provided lease terms and conditions are met. In keeping with Bureau policy, no new camplot leases have been developed or are anticipated.

Eagle Lake Camps. This sporting camp complex, once known as Michaud Camps, consists of 18 log buildings on leased land located on the tip of the peninsula at the mouth of the Thorofare, one of the more scenic spots on the Eagle Lake shoreline. Originally built in 1921 the camps provided a "rustic but genteel" sporting camp experience at a time when this type of experience was in demand. The camps were under a lease agreement with the Pingree Heirs prior to state ownership. The facility then fell into disrepair but has since been rebuilt in anticipation of its becoming viable again. Access has traditionally been by boat or by snowmobile, with road access possible across private lands at the landowner's discretion. A significant portion of this road is on the Unit. Vehicle access by clients is normally restricted to emergency use, or when lake conditions make access by boat or snowmobile unsafe. The Bureau has worked with the lessee to address permit needs relating to improvements to the camps, and otherwise provide a lease arrangement favorable to its continuation as a commercial sporting camp.

Transportation and Administrative Management Issues

- Much of the vehicle access to the Unit requires crossing private land, and important routes require up to 13 miles across abutting land. Securing formalized road-use agreements or public road frontage will be important to ensure continued management and recreational access.
- The management road system within the Unit is largely in place, although considerable reconstruction will be necessary along certain portions.
- The owner of Eagle Lake Camps may require further cooperation from the Bureau to restore the sporting camp tradition to Eagle Lake.

3. Resource Allocations and Management Recommendations

The following resource allocation categories are listed in the order they appear in the allocation summary on page 10 of the Integrated Resource Policy.

SPECIAL PROTECTION AREAS

Special Protection as a Dominant Use. The Special Protection allocation as a dominant use will apply to the following areas:

- The 83-acre Parker Bog parcel, part of the Cross Lake Fen
- The peat bog between Eagle and Square Lakes
- The 15-acre old growth stand northeast of Blake Lake

Special Protection Management Recommendations

- Harvests near areas identified as having unique or important natural community types will be planned in consultation with the Maine Natural Areas Program.
- Further exploration of cedar seepage areas will be conducted to determine if they have rare plant species and pockets of mature hardwoods.

FISHERIES AND WILDLIFE AREAS

Wildlife Management as a Dominant Use. The Wildlife Management allocation as a dominant use will apply to the following areas:

- The shorelines (riparian zones) of water bodies, primary and secondary streams, and wetlands.
- Softwood stands with potential for use as a deer wintering area, including the area along the lower end of the Thorofare, and the Bear, Halfway, Alec, Miller, and the Three Brooks areas.
- The open fields on the Clover Hill Lodge property and on T16 R6.

Wildlife Management Recommendations

- Continue to manage forest stands for a diversity of age classes and species that also supports greater habitat diversity and populations of wildlife.
- Continue active management of the softwood stands near the Thorofare and at Bear, Halfway, Alec, Miller, and Three Brooks to enhance their suitability as potential deer wintering areas. Include these areas in the Bureau's Cooperative Deeryard Agreement with Inland Fisheries and Wildlife.
- Monitor the beaver dam activity on the Unit and its impacts on wildlife habitat in general. Work with Inland Fisheries and Wildlife to better determine the impact of this activity on smelt spawning habitat.
- Manage the former agricultural lands on the Clover Hill Lodge parcel as open fields. Continue maintenance of the open field on the T16 R6 parcel.

RECREATION AND VISUAL AREAS

Recreation and Visual Management Areas. Recreation Management and Visual allocations will apply to the following areas:

- The shorelines of Eagle, Blake, and Square Lakes, and the Thorofare will be allocated for Remote Recreation as a secondary use.
- The background views as seen from Eagle, Blake, and Square Lakes and the Thorofare will be allocated as Visual Class II areas.
- The 25 miles of “shared use road” will be allocated as Visual Class I areas.

Recreation and Visual Management Recommendations

- Continue to manage Blake Lake for its remote character by keeping road access and the campsite informal (no active maintenance).
- Explore the feasibility of developing a drive-to campsite area on the east end of Eagle Lake off the Square Lake Road including its use as a primitive boat launch site and access point for snowmobiles.
- Explore the feasibility of developing a trailered boat access site on Square Lake at Rocky Point.
- If demand warrants, develop additional water access campsites on Eagle Lake, and Rocky Point on the Square Lake parcel.
- Manage the 25 miles of Shared Use Roads for general snowmobile and ATV trail use, in recognition of its importance in providing connections to regional trail systems.
- Explore the feasibility of providing cross country ski and dog sled trails throughout the Unit.
- Work with the Boating Facilities Division in providing adequate space for overnight parking for those camping on the Unit.
- Continue to manage the visual resources as seen from the lakes in conjunction with timber management activities and improvements to recreational use areas.

TIMBER MANAGEMENT AREAS

Timber Management as a Dominant Use. The Timber Dominant allocation (except where otherwise noted) will apply to the following areas:

- Most of the Unit will be allocated as Timber Dominant.

Timber Management Recommendations

- Continue the primary goal of managing the forest for a wider diversity of age classes and species.
- Identify and favor resistant beech stands as a means to address the increasing mortality of beech throughout the Unit.
- Implement timber stand improvements (TSI) when time and budgets allow.
- Focus on harvesting low quality hardwoods when markets are favorable.
- With respect to the ecological sensitivity within cedar stands, these areas will be managed in winter only, and in consultation with the Maine Natural Areas Program. Where harvesting is planned near areas identified as having important natural communities, MNAP will be consulted.

TRANSPORTATION AND ADMINISTRATIVE CONSIDERATIONS

Management Recommendations

- Interior roads will be improved and maintained as needed for management access, and may remain unmaintained at other times.
- The Square Lake Road, where it crosses the southeast corner of the Unit, will be managed as a public use road.
- The Clover Hill Lodge Road will be managed under a road maintenance contract. Other roads may be managed under similar contracts.
- Continue to work with the owner of Eagle Lake Camps regarding the current and future need for the gate and roaded access to the sporting camp facility.

Salmon Brook Lake Bog

1. Character of the Landbase

The 1,857-acre Salmon Brook Lake Bog Unit, located in the Town of Perham, was acquired from The Nature Conservancy in 1993 through the Land for Maine's Future Program. The property is known for its extensive wetlands and is host to six rare plant populations and six exemplary natural communities. In recognition of the properties' important natural resource values, a "Memorandum of Understanding" (see Appendix F) with the Nature Conservancy was signed in 1993 whereby the Bureau agreed to include TNC in future management planning for the property and to review and comment on proposed management activities.

A 1,055-acre Ecological Reserve surrounds the lake and wetlands on the Unit with the remaining acres primarily forestland. The property is surrounded by agricultural lands and industrial timberlands. A 140-acre conservation easement donated by the abutting landowner connects the main portion of the Unit to a detached parcel to the west. The Bureau-managed Bangor and Aroostook Trail, a multi-use trail corridor, passes through the west side of the Unit.

Salmon Brook Lake is a shallow, 51-acre lake with a maximum depth of five feet, although most of the lake averages between one to two feet. The drainage area is 1.79 square miles and drains into the Aroostook River. Historically, the outflow of the lake was dammed for logging purposes. Though the dam is no longer functional, beavers continue to have a significant impact on the outlet stream, consequently affecting lake water levels.

2. Resources and Management Issues

Natural and Geological Resources

Geology and Soils

The bedrock that underlies the Unit was deposited during the Silurian period, 443 to 417 million years ago. At that time, an ancestral ocean basin was closing, and mountains were shedding large amounts of sediment into the ocean. These sediments were lithified and uplifted. The bog itself is part of the Frenchville Formation, comprised mostly of sandstone and conglomerate rock. The eastern portion of the Unit consists of the New Sweden Formation, a calcareous pelite (mudstone). The northwest corner is part of the Jemtland Formation, which is interbedded pelite and sandstone. The surface deposits are primarily till in the uplands and swamp, marsh, and bog deposits in the lowlands. Soils in the Unit are of the Daigle-Aurelie-Perham soil series. The presence of calcareous pelite bedrock contributes to circumneutral soil and water pH values.

Wetlands

More than one third of the Salmon Brook Lake Unit (692 acres) is wetlands. There are 416 acres of forested wetlands and 276 acres of open wetlands. Fens, areas fed by mineral-rich ground water and somewhat uncommon in Maine, are included in the wetlands. The presence of fens at Salmon Brook Lake helps explain the presence of numerous rare plants. The open wetlands surrounding Salmon Brook Lake show few signs of human disturbance.

Ecological Processes

Peatlands, such as the bog communities that ring Salmon Brook Lake, are formed by mats of *Sphagnum* moss that accumulate in basins. *Sphagnum* moss is remarkable for its ability to absorb water. Some species are able to absorb as much as twenty-seven times their dry weight in water. In a bog, *Sphagnum* wicks up water and holds it, often creating a water table that is locally perched above the level of the regional water table. Once peat is saturated, added water runs off (similar to a wet sponge). By holding water so effectively, the moss deprives other would-be plant competitors of oxygen. *Sphagnum* also acidifies its surroundings by taking mineral cations from solution and replacing them with hydrogen ions. Plants willing to live in this harsh environment develop specialized means of surviving the lack of oxygen and acidified water, such as leathery leaves that slow water evaporation from the plant and shallow roots that allow the plant to get oxygen at the level of the water table.

Ecological Reserve

The Salmon Brook Lake Ecological Reserve was designated in 2000 and captures many ecological features characteristic of Maine's northeastern limestone belt, including circumneutral fens, northern white cedar swamps, and numerous rare plants. Fens are somewhat uncommon in Maine and their presence helps explain the rare plants and communities found on the Unit. The lake itself is quite shallow, averaging one to two feet in depth. While only 363 acres of the Reserve are within the upland, 610 acres were classified as "regulated," suggesting that much of the forested wetland supported merchantable timber. Saturated soils create slow growing conditions with one six-inch tree determined to be over 200 years old.

Fourteen permanent monitoring plots were established within the Reserve in 2002. These plots will be revisited once every ten years. More information on the ecology of the Salmon Brook Lake Ecological Reserve can be found in the Natural Resource Inventory for the Northern Aroostook Region (referenced in Appendix G and available under separate cover).

Rare Plant Species

Six rare plant populations, centered in the most calcareous areas of the fen, are known on the Unit. Swamp fly honeysuckle (*Lonicera oblongifolia*) (S3), small round-leaved orchis (*Amerorchis rotundifolia*) (S2), and showy lady's-slipper (*Cypripedium reginae*) (S3) are found in cedar swamps north of Salmon Brook Lake. Other species associated with these plant populations include bunchberry (*Cornus canadensis*), black spruce (*Picea mariana*), northern white cedar (*Thuja occidentalis*), cinnamon fern (*Osmunda cinnamomea*), dwarf raspberry (*Rubus pubescens*), and two-seeded sedge (*Carex disperma*).

Marsh valerian (*Valeriana uliginosa*) (S2) grows in the transition zone from forested to open wetland within a small (~2 acre) circumneutral fen northeast of Salmon Brook Lake. This plant has small pink or white funnel-shaped flowers that grow in clusters. Associated plant species include: northern white cedar, three-seeded sedge (*Carex trisperma*), sweet gale (*Myrica gale*), bristle-stalked sedge (*Carex leptalea*), deer's hair sedge (*Trichophorum cespitosum*), and bog rosemary (*Andromeda polifolia*).

Lapland buttercup (*Ranunculus lapponicus* (S1) pictured) is found in several locations throughout the Unit. This A-ranked population has more than 470 individuals and is found in

moist cedar swamps. Associated species include: cedar, dwarf raspberry, two-seeded sedge, long-stalked sedge (*Carex pedunculata*), and coltsfoot (*Tussilago farfara*), an exotic species that can be invasive. In the southwest portion of the population, canopy closure is 75%, and some cedars cored in the area are over 200 years old.



Pygmy water-lily (*Nymphaea leibergii*) (S1) grows in the Salmon Brook Lake outlet stream. This white-flowered water-lily prefers cold, rich waters and reaches the southern and eastern limit of its range in Maine. It is most often found in slow-flowing streams in cool, clear waters, mainly at inlets where rivers and streams enter major lakes. This population, one of only fifteen in the state, includes more than 70 plants. Continued stable water levels will help ensure the health of this population.

Natural Communities

The Unit has a number of exemplary forested and open wetland natural communities. All of the natural communities described in this section are considered exemplary.

An Unpatterned Fen Ecosystem dominates the property. Within this ecosystem are several exemplary natural communities that represent a variety of calcareous habitats. Wooded (mostly dominated by cedar) and open wetlands provide a remarkably diverse flora over a pH range from very acid to circumneutral/alkaline.

A Shrubby Cinquefoil – Sedge Circumneutral Fen is located north of the lake. This two-acre, good quality fen is surrounded by spruce and cedar swamps. Some areas are dominated by low shrubs such as leatherleaf (*Chamaedaphne calyculata*), bog rosemary (*Andromeda polifolia*), and sweet gale. In other areas, sedges such as slender sedge (*Carex lasiocarpa*) are common.

Surrounding the lake is a 65-acre Sedge – Leatherleaf Fen Lawn. This natural community has leatherleaf and sweet gale in the shrub layer with slender sedge dominant in the herb layer. Due to its size and pristine condition, this Sedge – Leatherleaf Fen Lawn is an excellent example of this natural community type.

South of the lake is a Spruce – Larch Wooded Bog. The western half of this community is dominated by larch while the eastern half is dominated by black spruce and balsam fir (*Abies balsamea*). Sheep laurel (*Kalmia angustifolia*), Labrador-tea (*Rhododendron groenlandicum*), and cotton-grass (*Eriophorum* spp.) are common in the understory.

West of Salmon Lake is an extensive Northern White Cedar Swamp that extends on both sides of the old railroad grade. This mature swamp is dominated by cedar with small amounts of fir (*Abies balsamea*), black spruce, and larch (*Larix laricina*). Basal area averages 175 ft²/acre with several trees found to be over 200 years old. Understory species include creeping snowberry (*Gaultheria hispida*), dwarf raspberry, and two-seeded sedge.

A second Northern White Cedar Swamp is located east of the lake, bordering the east side of the stream. This 25-acre stand has mature trees up to 150 years old.

Natural Resource Management Issues

- Due to the unique ecology within the designated Ecological Reserve, any other management of the property will require careful planning.
- There is interest in providing recreational/educational facilities within the interior of the Unit, including a hiking trail, viewing area, and a hand carry boat access site to the outlet of the lake.
- Beaver flooding, associated with blocked culverts under the railroad grade, has threatened populations of the Lapland buttercup in the past. A neighbor to the Unit has monitored the populations of this plant and the water levels associated with flooding. If necessary, beaver control may be needed to perpetuate this rare plant population.
- There are two areas (approximately 90 acres) on the southwest portion of the main Unit and near the center of the detached parcel that contain attributes recommended for inclusion in the Ecological Reserve.

Historic and Cultural Resources

According to *Maine's Historic 1870 Swedish Colony Guide, History, Map, and Tourguide*, the Town of Perham was first surveyed for settlement in 1860 whereby lots were then sold and cleared. There was an initial rush of settlement to this area that was interrupted by the Civil War. The town was later named for Sidney Perham who served as Governor of Maine from 1871-1874.

Logging and farming have significantly shaped the history and character of this area. Portions of the Unit now forested show evidence of its once being cleared for pasture. A dam created for logging once existed on the outlet of Salmon Brook Lake no longer exists.

Fisheries and Wildlife Resources

Beavers play a significant role in the character and ecology of the Unit and are quite active in the small tributaries that feed into Salmon Brook Lake and in the outlet of the lake. Beavers build dams to gain access to the hardwoods they prefer to eat. When active, beaver ponds flood adjoining uplands, enlarging wetlands and creating new areas for wetland species to colonize. Once the hardwoods within a safe distance of the pond are gone, beavers will often abandon their dams and build new ones in other locations, a common occurrence on the Unit. These abandoned ponds typically fill slowly with sediment and transition from marshy wetlands back to uplands. By creating and abandoning impoundments along the stream course, beavers create a mosaic of habitats for other plant and wildlife species. Water levels in Salmon Brook Lake have recently dropped to the level they were ten years ago. This change in water level may be due to beavers abandoning a dam at the lake outlet.

A deer wintering area is located on the southeast side, although this portion of the Unit was heavily harvested prior to state acquisition. This area has been documented by aerial

surveillance, but no on-the-ground surveys have confirmed its use by deer during periods of deep snows. The density of softwood saplings should provide good cover in about 15 years. There is a relatively high population of hares on this portion, indicative of other species being present. Other mammals typical of northern Maine are likely found throughout the Unit, including moose, bear, fisher, and marten.

Freshwater mussels found in Salmon Brook Lake include eastern elliptio and eastern floater.

Fish species include white sucker, threespine stickleback, pearl dace, blacknose shiner, northern redbelly dace, finescale dace, blacknose dace, brook trout, creek chub, and fallfish. A limited number of local residents have been known to fish the lake in early spring, but access across Bureau lands for this purpose is difficult, with access across private lands for this purpose also difficult or no longer available.

Fisheries and Wildlife Management Issues

- Beaver activity is significant throughout the Unit
- There is some potential for winter cover for deer in the southeast portion of the Unit. Providing deer cover would be a valuable resource for this area.
- The area around the Reserve provides wildlife habitat not common in this area.
- Access across the Unit for fishing is difficult; there is local interest in providing access to the inlet stream for fishing.

Recreation and Visual Resources

The Bureau owned and managed Bangor and Aroostook Trail (BAT) corridor passes through the western end of the property. This trail is part of the Washburn to New Sweden segment of an extensive abandoned railroad system acquired by the Bureau in 1994, which has been converted to a four season multi-use trail.

No facilities for recreation occur on the Unit at this time, although there has been interest in providing trail access from the BAT to interior portions of the property for various purposes, including hiking, nature study, or enjoying views of the bog and pond. Others have expressed an interest in having a hand-carry boat access area provided at the lake's outlet stream. A trail-side picnic shelter on the BAT trail could also serve as a trailhead for these activities. Because of the important ecological values within the designated Ecological Reserve, recreational opportunities will need to be carefully planned. A "Memorandum of Understanding" developed at the time of acquisition of the property (see appendix) directs the Bureau to work with The Nature Conservancy in planning and implementation of management activities for the Unit, and will be included in any planning regarding this and future access proposals.

Recreation and Visual Resources Management Issues

- There is interest in providing opportunities for recreational and educational trail use within the interior of the Unit including a hiking trail, viewing area, and a hand-carry boat access site to the lake and streams.

Timber and Renewable Resources

Parts of the uplands and forested wetlands on the Unit show signs of heavy harvesting from previous owners, but the Bureau has conducted no harvesting on the Unit. Portions of the Unit now forested also show evidence of its once being cleared for pasture. A dam created for logging once existed on the outlet of Salmon Brook Lake but is no longer there, though beavers continue to build dams along the stream.

There are four areas along the margins of the Unit that would benefit from timber management to restore the natural character of the area and enhance habitat for a variety of wildlife. Due to easy access, several sites would make ideal locations for conducting “demonstration forests” whereby forest management and restoration techniques commonly used by the Bureau would be conducted and demonstrated as an educational tool.

A “Memorandum of Understanding” (see appendix) for management of the property directs the Bureau to provide The Nature Conservancy with copies of land management prescriptions, and to give TNC an opportunity to comment on proposed timber harvesting activities. These prescriptions are in the process of being completed.

Timber Management Issues

- Forest stands along the margins of the Unit were heavily harvested at one time and would benefit from timber management to restore the natural character and enhance wildlife habitat.
- The easy access to certain forest stands makes these areas ideal for conducting “demonstration forests” for educational purposes.
- Any harvesting activities will be planned in consultation with The Nature Conservancy and the Maine Natural Areas Program.

Transportation and Administrative Considerations

Roaded access consists of a town-owned road system that surrounds the Unit. There is less than ½ mile of frontage along the Tupper Road to the east, slightly more than ½ mile of frontage along the Tangle Ridge Road to the north, and less than ½ mile frontage (detached parcel) along the High Meadows Road to the east. The Bangor and Aroostook Trail does not provide public vehicle access to the Unit.

The Bureau recently received information concerning potential ownership discrepancies in the northwest corner of the property. The Bureau will verify if there are ownership issues and will take appropriate action to resolve these issues. Action will also be taken to address encroachment issues as they arise.

Transportation and Administrative Issues

- The Bangor and Aroostook Trail provides the only access on the Unit.
- There may be ownership discrepancies on the northwest corner of the Unit that will need to be resolved.

3. Resource Allocations and Management Recommendations

The following resource allocation categories are listed in the order they appear in the allocation summary on page 10 of the Integrated Resource Policy.

SPECIAL PROTECTION AREAS

Special Protection as a Dominant Use. The Special Protection allocation as a dominant use will apply to the following areas:

- The designated Ecological Reserve

Special Protection Management Recommendations

- Monitor beaver activity in the Unit for its impact (positive or negative) on the values being protected within the Ecological Reserve.
- Make adjustments to Reserve boundaries, where necessary, to include important ecological areas that may have not been included in the 2000 designation.
- Work with local residents, TNC, and MNAP towards developing trail access to a viewing area within the interior of the Unit.

FISHERIES AND WILDLIFE AREAS

Wildlife Management as a Dominant Use. The Wildlife Management allocation as a dominant use will apply to the following areas:

- The shorelines (riparian zones) of waterbodies, primary and secondary streams, and wetlands outside the Ecological Reserve will be allocated as Wildlife Riparian Areas.
- The upland acres outside the Ecological Reserve will be allocated as a Wildlife Dominant Area.

Wildlife Management Recommendations

- Monitor the beaver activity on the Unit for its impact (positive or negative) to wildlife habitat in general.
- Actively manage the areas outside the Ecological Reserve to improve wildlife habitat, utilizing timber management as appropriate to accomplish this goal.
- Work with local residents, The Nature Conservancy, and the Maine Natural Areas Program in providing a hand carry boat site on the outlet or inlet streams for fishing purposes.

RECREATION AND VISUAL AREAS

Recreation and Visual Management Areas. Recreation Management and Visual allocations will apply to the following areas:

- Areas along public use roads and the Bangor and Aroostook Trail corridor will be allocated as Visual Class I areas.

Recreation and Visual Management Recommendations

- Work with local residents, The Nature Conservancy, and the Maine Natural Areas Program towards providing recreational trail access to the interior portions of the Unit.
- Develop a trail-side picnic shelter along the Bangor and Aroostook Trail in partnership with the Off-road Vehicle Division and local trail clubs, should a trail to interior portions of the Unit be developed.

TIMBER MANAGEMENT AREAS

Timber Management as a Dominant Use. The Timber Dominant allocation (except where otherwise noted) will apply to the following areas:

- No Timber Dominant acres will be allocated on the Unit. Timber management on the acres not within the Ecological Reserve will be allocated as secondary use with respect to its Wildlife Dominant designation.

Timber Management Recommendations

- Manage the forest stands near the margins of the Unit with a focus on enhancing wildlife habitat and restoring the natural forest environment.
- Determine the feasibility of developing a “demonstration forest” for educational purposes.
- Consult with The Nature Conservancy and the Maine Natural Areas Program in any harvest planning on the Unit. Provide local residents with an opportunity to comment on these plans once they are available.

TRANSPORTATION AND ADMINISTRATIVE CONSIDERATIONS

Management Recommendations

- No public access roads will be developed on any portion of the Unit.
- Resolve any ownership discrepancies in the northwest corner of the Unit.

Caswell Public Lot

1. Character of the Landbase

The Caswell lot is a 1,248-acre original public lot near Maine's northeast border with Canada. The property is primarily forested with timber management comprising most of the use.

2. Resources and Management Issues

The parcel has 1,051 forested acres and is dominated by softwood (83%), with the remainder in mixedwood (13%) and hardwood (4%). There are 303 acres of wetlands on the parcel, with 199 in forested wetlands, and 104 acres in open wetlands. There are 231 acres of wading bird and waterfowl habitat. The bedrock consists mostly of interbedded pelite (mudstone) and limestone/dolostone (Cary Mills Formation). Surface deposits consist mostly of a stagnation moraine resulting from the last glaciation, though small areas also contain till. The soil types are Caribou-Mapleton-Conant and Danforth-Masardis-Shirley. The property's relatively rich limestone/dolostone bedrock is unusual in Maine.

An exemplary Patterned Fen Ecosystem forms the southwest corner of the property. Though the entire ecosystem is 850 acres, only 37 acres are within the public lot. The portion on state land consists of the edge of a large Sheep Laurel – Dwarf Shrub Bog. This bog has 10% cover of black spruce up to 20 feet tall. Sedge and shrub cover consist of about 30%. The dominant species include tawny cotton-grass, leatherleaf, Labrador-tea, sheep laurel, three-leaved false Solomon's seal, black spruce, and bog rosemary. Though not exemplary, the fringes of Mud Pond are characterized as a Leatherleaf Boggy Fen, with 40% of this area covered with leatherleaf.

The parcel contains a significant population of moose.

Timber management comprises the primary use on the parcel, with approximately 14,000 cords harvested since the mid-1980s. Access to this property is across private land. The interior road system was constructed for winter timber management purposes. A local ATV club has shown interest in incorporating some of these roads as part of a larger system proposed on abutting private lands.

Summary of Management Issues

- There is no deeded access to the public lot.
- A local ATV trail club has interest in using portions of the winter road system.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. The shoreline of Mud Pond and the stream sides of Boney Brook will be allocated as Wildlife Riparian Areas.

Timber Management as a Dominant Use. The remainder of the Caswell Public Lot will be allocated as Timber Dominant, with the exception of the southwest corner of the lot in the area near the exemplary Patterned Fen.

Timber Management Recommendations

- Work in consultation with the Maine Natural Areas Program where harvesting may occur near exemplary natural communities identified by the Maine Natural Areas Program.

Cyr Public Lot

1. Character of the Landbase

The Cyr Plantation lot is a 1,000-acre original public lot located southwest of the Town of Van Buren. The property is primarily forested with timber management comprising most of the use.

2. Resources and Management Issues

The parcel has 972 forested acres. Approximately 55% of these acres are mixedwood, with the remainder in softwood (30%) and hardwood (15%). The west side of Moose Mountain contains a 5-acre stand of old growth spruce. The property has 76 acres of wetlands, with 50 acres in forested wetlands, and 26 acres in open wetlands. There are 29 acres of wading bird and waterfowl habitat. The bedrock is calcareous pelite (New Sweden Formation), and is mostly underlain by till, though the eastern third consists of a stagnation moraine. The dominant soil type is Perham-Daigle-Chesuncook.

The parcel contains a significant population of moose.

There is also a 1.3-mile snowmobile club trail on the parcel.

Approximately 6,700 cords have been harvested from this property since the mid 1980's. Access to this property is across private land. The interior road system was constructed for summer and winter timber management purposes.

Summary of Management Issues

- There is no deeded access to the public lot.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. The stream sides of Violette and Picard Brooks will be allocated as Wildlife Riparian Areas.

Timber Management as a Dominant Use. The remainder of the Cyr Public Lot will be allocated as Timber Dominant, with the exception of the 5-acre stand of old growth spruce that is no longer being managed for timber.

Timber Management Recommendations

- Manage the timber to minimize conflicts with motorized trail uses and to enhance the aesthetic values along these trails.

Hamlin Public Lot

1. Character of the Landbase

The Hamlin lot is a 982-acre original public lot located near Maine's northeast border with Canada. The property is primarily forested, with open wetlands comprising approximately 15% of the parcel.

2. Resources and Management Issues

There are 818 forested acres on the parcel. Approximately 62% of these acres are mixedwood, with the remainder in softwood (33%) and hardwood (5%). Harvesting has not taken place on the parcel since the early 1980's because of wet ground and spruce budworm outbreaks. This combination of events has resulted in young forest conditions on this parcel.

There are 200 acres of wetlands on the property with 59 acres in forested wetlands, and 141 acres in open wetlands. There are 356 acres of wading bird and waterfowl habitat. A number of wetland communities are present including Sheep Laurel – Dwarf Shrub Bog, Northern White Cedar Woodland Fen, Mixed Graminoid Shrub Marsh, Spruce – Larch Wooded Bog, and Alder Thicket. In addition to the numerous small wetlands, some of which show beaver activity, a sizable wetland drainage (approximately 36 acres) cuts across the southeast portion of the property. This open wetland is dominated by speckled alder and includes tall meadowrue, bluejoint grass, joe-pye weed, drooping sedge, nodding beggar's ticks, and arrow-leaved tearthumb.

The bedrock consists of interbedded pelite (mudstone) and limestone/dolostone (Cary Mills Formation). The surface deposits consist mostly of a stagnation moraine resulting from glaciation, though till can be found in some areas. The property's relatively rich

limestone/dolostone bedrock is unusual in Maine. The two soil types found on the property are Caribou-Mapleton-Conant and Danforth-Masardis-Shirley. The parcel contains a significant population of moose.

Access to this property is across private land. The interior road system was constructed for winter timber management purposes.

Summary of Management Issues

- There is no deeded access to the public lot.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. The stream sides of Martin Brook and associated branches will be allocated as Wildlife Riparian Areas.

Timber Management as a Dominant Use. The remainder of the Hamlin Public Lot will be allocated as Timber Dominant, with the exception of the open wetland areas.

New Canada Public Lot

1. Character of the Landbase

The New Canada lot is a 1,000-acre original public lot located north of the Eagle Lake Unit. The parcel is almost entirely forested, with timber management being the primary management activity on the parcel.

2. Resources and Management Issues

Approximately 55 % of the forested acres are hardwood, with the remainder in mixedwood (40%) and softwood (5%). There are 47 acres of forested wetlands and only 4 acres of open wetland. There is significant beaver activity on the parcel. A Northern White Cedar Swamp is located in the south-central portion of the property.

The bedrock consists of interbedded pelite (mudstone) and sandstone (Seboomook Formation). Most of the surface deposits are till, though swamp, marsh, and bog deposits follow the Dimock Brook drainage. The soil types are Telos-Thorndike-Chesuncook, Thorndike-Winnecook-Plaisted, and Aurelie-Burnham-Daigle.

Since the mid 1980's approximately 7,100 cords have been harvested from the property. Access to the lot is across private land. The interior road system was constructed for summer and winter

timber management purposes. There are also 2.5-miles of ATV trail on the parcel managed by local clubs.

Summary of Management Issues

- There is no deeded access to the public lot.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. The stream sides of Dimock Brook (and tributary) will be allocated as a Wildlife Riparian Area.

Timber Management as a Dominant Use. The remainder of the New Canada Public Lot will be allocated as Timber Dominant.

Timber Management Recommendations

- Manage the timber to minimize conflicts with motorized trail uses and to enhance the aesthetic values along these trails.
- Consult with the Maine Natural Areas Program in harvest planning in the area around the Northern White Cedar Swamp.

New Sweden Lots

1. Character of the Landbase

The New Sweden West lot (117 acres) and East or River lot (175 acres) are considered “public domain” lots. These parcels differ from original public lots in that they were not set aside in the 1800’s for future settlements but instead were surplus properties left over from land sales of that time. Prior to 1984, the New Sweden lot consisted of the River lot only, which included parcels on both sides of the Little Madawaska River. The current West lot on Route 161 was acquired in an exchange of land involving the east shore lot on the river.

The two lots are mostly forested and have been used primarily for timber management, although there is some recreational trail use of the River lot via the Bangor and Aroostook rail trail.

2. Resources and Management Issues

Softwood cover dominates these lots with only 33 acres of forested and open wetlands. The bedrock on these lots are primarily calcareous pelite (mudstone - New Sweden Formation), with surface deposits consisting of till on the West lot. The River lot contains three different types of deposits, including till; swamp, marsh, and bog; and ice-contact glaciofluvial features.

The West lot is dominated by Daigle-Aurelie-Perham soils; the River lot by Allagash-Stetson-Masardis soils.

Access to the River lot is via the state-owned and managed Bangor and Aroostook multi-use trail which passes along its west boundary, and the Little Madawaska River forming the east boundary. The Hedman Road provides access to the West lot, the easterly boundary of which follows along State Route 161. The Bureau has harvested nearly 600 cords from the West lot since the mid 1980's. Prior to the 1984 land exchange, 1,000 acres had been harvested from the River lot. The state-owned and managed Bangor and Aroostook multi-use trail corridor passes along the west boundary of the River lot, where a picnic shelter was constructed in the 1990's for trail users.

There are approximately 2 acres of apple orchard included in the Bureau's wildlife management program. Efforts have been ongoing to "release" the apple trees (enhancing its ability to bear fruit) as a wildlife food.

Summary of Management Issues

- Ongoing management of the apple trees on the West lot will be necessary to enhance its value for wildlife.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. The shoreline of the Little Madawaska River and Bearsley Brook (both on the River lot) will be allocated as Wildlife Riparian Areas. The two-acre area around the apple orchard on the West lot will be allocated as a Wildlife Management Area.

Timber Management as a Dominant Use. The remainder of the River and West lots will be allocated as Timber Dominant.

Timber Management Recommendations

- Manage the timber to minimize conflicts with uses along the Bangor Aroostook Trail and to enhance the aesthetic values along this trail.

St. John Plantation Public Lots

1. Character of the Landbase

The St. John North and South lots are original public lots (500 and 667 acres respectively) located between St. Francis and Fort Kent. Both lots are mostly forested, with timber management comprising the primary use of the South lot.

2. Resources and Management Issues

Forest cover on the North lot is mostly hardwood (86%), with the remainder in mixedwood (12%) and 2% in softwood. There are 6 acres of open wetland. On the South lot, approximately 82% of the forested acres are hardwood with the remainder in softwood (18%). This lot has 12 acres of forested wetlands and only one acre of open wetland. Beaver activity is evident along the stream, including one area where a small, open sedge meadow has formed following the abandonment of a beaver dam several years ago. After completion of summer 2005 field work, a population of rare orchid (giant rattlesnake-plantain) thought to be on the North lot was found to be to the west on abutting lands, although suitable habitat is located on the public lot. Habitat needs for this orchid can be variable, generally requiring shady softwood or mixedwood forests, often in the drier areas of cedar seepage forests such as the area found along Black Brook.

Two small areas (on both the North and South lots) are not managed for timber due to the presence of steep slopes.

The bedrock on the North parcel consists of interbedded pelite (mudstone) and sandstone (Seboomook Formation), with surface deposits primarily till. The soil type is Thorndike-Winnecook-Plaisted. The bedrock on the South parcel consists of interbedded pelite (mudstone) and sandstone (Seboomook Formation) with surface deposits primarily till - except for the bog deposits within the drainage that bisects the parcel. The soil types are Thorndike-Winnecook-Plaisted and Telos-Thorndike-Chesuncook.

A deeded right-of-way leads to the North lot from the Franklin School Road. Access to the South lot is across private land. There are two cabins on the South lot leased for snowmobile club use. A spruce budworm salvage project took place on the North lot in 1982. The Bureau harvested 4,000 cords on the South lot from 1999-2000. The interior road system on the South lot was constructed for summer timber harvesting purposes.

Summary of Management Issues

- There is no deeded access to the South lot.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. The stream shore of Black Brook will be managed as a Wildlife Riparian Area.

Timber Management as a Dominant Use. The remainder of the North and South lots will be allocated as Timber Dominant.

Timber Management Recommendations

- Manage the timber on the South lot to minimize conflicts with motorized trail uses and to enhance the aesthetic values along these trails.

- Consult with the Maine Natural Areas Program in planning harvests near the area that may provide habitat for the giant rattlesnake-plantain orchid.

T16 R9 Unlocated Interest

Township 16 Range 9 is a 23,340-acre township that abuts the northern boundary of the Deboullie Unit. The state owns 97 acres of unlocated interest (common/undivided) within the township of which Irving Timberlands is the principal owner. Additional interests in the township (part of a 1,000-acre Original Public Lot) were conveyed to International Paper as part of a state-wide land trade in 1977; the 97 acres is what remains from that trade. A timber management agreement with Irving Timberlands provides a small amount of stumpage revenue to the Bureau.

T17 R4 (Sinclair) Public Lot

1. Character of the Landbase

The 300-acre T17 R4 lot is an original public lot located along Route 162, with over 2,218 feet of frontage on Mud Lake. Most of the property is forested. A 200-acre portion of the original lot was sold to the Town of Sinclair Sanitary District in 1994.

2. Resources and Management Issues

The forested acres are dominated by softwood. There are 157 acres of forested wetlands, and only 4 acres of open wetlands. Some areas, especially in the northwest corner of the parcel, are dominated by dense stands of northern white cedar.

The bedrock consists of interbedded pelite (mudstone) and sandstone (Fish River Lake Formation). Surface deposits are mostly till, with Sphagnum moss over mineral soil found in one location and clay loam covered by a ten inch layer of peat in another. The soil type is mostly Aurelie-Burnham-Daigle.

A harvest plan for this parcel will be implemented in the near future.

The frontage on Mud Lake had been considered for a possible location of a public boat launching site, but was recently determined not be suitable for this use.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. The shoreline of Mud Lake will be allocated as a Wildlife Riparian Area.

Timber Management as a Dominant Use. The remainder of the T17 R4 lot will be allocated as Timber Dominant.

Westmanland Public Lot

1. Character of the Landbase

The Westmanland lot is a 965-acre original public lot near the southwest shoreline of Lower Madawaska Lake, and is mostly covered by forest. The property has been used primarily for timber management.

2. Resources and Management Issues

Approximately 79% of the forested acres are mixedwood, with 13% in softwood and 8% in hardwood. There are only 2 acres of open wetland on the entire lot. The Bureau also manages an 18-acre Deer Wintering Area on the parcel.

The bedrock is primarily interbedded pelite (mudstone) and sandstone that is part of the Madawaska Lake Formation. Small parts of the northeast and southeast corners of the property are lithic sandstone and conglomerate members of the Frenchville Formation. The surface deposits on the parcel are primarily till; the soil type is mostly Perham-Daigle-Chesuncook.

There has been interest from the Town in establishing a nature trail on the property.

The Bureau has harvested 4,000 cords since 1990. In 1987, the Bureau conveyed lease interests in 64 camplots along and near the lake, which included the frontage on the lake. The existing camp road provides access to these lots; however, access to the property for management purposes is across private land. The Bureau has been looking at the option of turning over the ownership of the camp road to the Town as its use is limited to the private campowners. An area at the end of the road has been leased from Irving Timberlands for use as a turnaround.

The internal road system of the property was constructed for both winter and summer timber management purposes.

Summary of Management Issues

- The current public road on the lot is used exclusively by private campowners. Access for management purposes is across private land.
- There is interest in establishing a nature trail on the property.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. A small section of McClusky Brook, where it crosses the parcel, will be managed as a Wildlife Riparian Area.

Timber Management as a Dominant Use. The remainder of the Westmanland lot will be allocated as Timber Dominant.

Timber Management Recommendations

- Should a nature trail be developed, manage the timber to minimize conflicts with this use and to enhance the aesthetic value along this trail.

Winterville Plantation Public Lot

1. Character of the Landbase

The Winterville Plantation lot is a 982-acre original public lot with 3,627 feet of frontage on St. Froid Lake and is mostly covered by forest. Its primary use has been for timber management.

2. Resources and Management Issues

Approximately 61% of the forested acres are hardwood, with 22% in mixedwood, and 17% in softwood. There are 64 acres of wetlands; 28 acres of which are open wetlands and 36 forested wetlands. There are 64 acres of wading bird and waterfowl habitat. The Bureau has also made one to two acre clearcuts within the abundant poplar stands, an ongoing wildlife project designed to enhance grouse nesting and forage habitat. The bedrock is interbedded pelite (mudstone - Seboomook Formation); surface deposits are primarily till, except for the Birch River drainage in the south, where it is underlain by swamp, marsh, and bog deposits. The parcel is dominated by Telos-Thorndike-Chesuncook soils. In 1986 the Bureau conveyed lease interests in 33 camplots along or near St. Froid Lake. The Bureau also conveyed the main access road through the parcel (Red River Road) to the Town of Winterville Plantation in 2006, but the Bureau retained a right-of-way. Nearly 8,000 cords have been harvested from the property since the mid 1990's.

3. Resource Allocations and Management Recommendations

The following resource allocations will apply:

Wildlife Management as a Dominant Use. The shorelines of St. Froid Lake and the Birch River will be allocated as Wildlife Riparian Areas.

Timber Management as a Dominant Use.

The remainder of the Winterville lot will be allocated as Timber Dominant.

V. Monitoring and Evaluation

Monitoring and evaluation are needed to track progress in achieving the management goals and objectives for the Unit and the effectiveness of particular approaches to resource management. Monitoring and evaluation will be conducted on wildlife, ecological, timber, and recreational management efforts throughout the Northern Aroostook Plan Region.

Implementation of Plan Recommendations

The Bureau will develop, within 2 years of Plan adoption, an action plan for implementing and monitoring the management recommendations in this Plan. This will include an assignment of priorities and timeframes for accomplishment that will be utilized to determine work priorities and budgets on an annual basis. The Bureau will document annually its progress in implementing the recommendations, plans for the coming year, and adjustments to the priorities and timeframes as needed.

Recreation

Data on recreational use is helpful in allocating staff and monetary resources for management of the properties throughout the Plan area, and in determining the public's response to the opportunities being provided. Public use data for the Deboullie Unit will continue to be collected at the North Maine Woods gates.

In addition to gathering data on use, the Bureau will monitor public use to determine:

- (1) whether improvements to existing facilities or additional facilities might be needed and compatible with general objectives;
- (2) whether additional measures are needed to ensure that recreational users have a high quality experience (which could be affected by the numbers of users, and interactions among users with conflicting interests);
- (3) whether use is adversely affecting sensitive natural resources or the ecology of the area;
- (4) whether measures are needed to address unforeseen safety issues;
- (5) whether changing recreational uses and demands present the need or opportunity for adjustments to existing facilities and management; and
- (6) whether any changes are needed in the management of recreation in relation to other management objectives, including protection or enhancement of wildlife habitat and forest management.

Wildlife

The Bureau, through its Wildlife Biologist and Technician, routinely conduct a variety of species monitoring activities statewide. The following are monitoring activities that are ongoing or anticipated for the Northern Aroostook Region:

- (1) The Bureau will cooperate with MDIF&W towards the preservation and enhancement of the blueback and wild brook trout populations.
- (2) The Bureau will establish and run a Bicknell's thrush monitoring survey route annually on the Deboullie Unit, in cooperation with the Vermont Institute of Natural Science.
- (3) The Bureau will cooperate with MDIF&W in the monitoring of game species, including deer, moose, grouse, and black bear.
- (4) The Bureau will identify and map significant wildlife habitat such as vernal pools and den trees in the process of developing its detailed forest management prescriptions. The boundaries of any sensitive natural communities will also be delineated on the ground at this time. Any significant natural areas or wildlife habitat will then be subject to appropriate protections.

Ecological Reserves

There are currently seventeen Ecological Reserves on BP&L lands throughout the state. Ecological Reserves are established “*for the purpose of maintaining one or more natural community types or native ecosystem types in a natural condition . . . and managed: A) as a benchmark against which biological and environmental change can be measured, B) to protect sufficient habitat for those species whose habitat needs are unlikely to be met on lands managed for other purposes; or, C) as a site for ongoing scientific research, long-term environmental monitoring, and education.*” (Title 12, Section 1801). The Maine Natural Areas Program (MNAP) is conducting long-term ecological monitoring within these Reserves.

There are two Ecological Reserves within the Plan area, including the Deboullie and Salmon Brook Lake Bog Units. The Maine Natural Areas Program conducted natural resource inventories on these lands in 2005 as part of the management planning process. MNAP is also undertaking long term monitoring of Ecological Reserves to track changes within the Reserves and to compare these areas to other areas under different management regimes. Baseline data for this purpose has been collected. These areas will be re-inventoried periodically to update this information.

Timber Management

The local work plans, called prescriptions, are prepared by professional foresters in accordance with Bureau policies specified in its *Integrated Resource Policy*, with input from other staff. These documents are then peer-reviewed prior to approval. Preparation and layout of all timber sales involve field staff looking at every acre to be treated. Trees to be harvested are generally hand marked on a majority of these acres. Regional field staff provide regular on-site supervision of harvest activities, with senior staff visiting these sites on a less frequent basis. After the harvest is completed, roads, trails, and water crossings are discontinued as appropriate,

although some management roads may remain open to vehicle travel. Changes in stand type resulting from the harvest are then recorded so that the Bureau's GIS system can be updated.

The Bureau is currently developing a post-harvest monitoring plan to assist forest managers in assessing harvest outcomes on all managed lands. The monitoring plan will also address water quality and Best Management Practices (BMP's) utilized during harvest activities.

Third party monitoring is done mainly through the forest certification programs of the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (SFI). Each program conducts rigorous investigations of both planning and on-ground practices. An initial audit by both programs was completed in 2000, with certification awarded in 2002. A full re-audit of both programs was conducted in the fall of 2006 with certification granted in 2007. The Bureau is also subject to compliance audits during the 5-year certification period.

VI. Appendices

- A. Allocation Maps
- B. Advisory Committee Members
- C. Summary of Management Issues and Management Recommendations
- D. Summary of Public Process and Written Public Comments
- E. Glossary
- F. Memorandum of Agreement – Salmon Brook Lake Bog
- G. References